UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

NOV 27 1990

REPLY TO ATTENTION OF: 5HS-11

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: NL INDUSTRIES/TARACORP SITE
GRANITE CITY, ILLINOIS

Dear Sir or Madam:

Enclosed is a Unilateral Administrative Order issued by the U.S. Environmental Protection Agency (U.S. EPA) under Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), 42 U.S.C. 9601, et seq.

Please note that the Effective Date of the Administrative Order (Order) is forty-five (45) days from the date of issuance of the Order. Please also note that the Order provides an opportunity for a conference, if requested within seven (7) days of the issuance date of the Order and held within fourteen (14) days of the issuance date of the Order, and an opportunity to submit comments within twenty-one (21) days of date of issuance of the Order.

If you have any questions regarding the Order, feel free to contact Mr. Steven Siegel, Assistant Regional Counsel, at (312) 353-1129.

Sincerely yours,

David A. Ullrich

David A. Ullrich
Director, Waste Management Division

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

In The Matter Of:	)	
	)	
NL Industries/Taracorp	)	
Granite City, Illinois	)	
	)	
	)	
Respondents: NL Industries, et al.	)	U.S. EPA
	)	Docket No.
	)	
Proceeding Under Section 106(a) of the	)	
Comprehensive Environmental Response,	)	
Compensation, and Liability Act of 1980,	)	
as amended (42 U.S.C. § 9606(a))	)	

ADMINISTRATIVE ORDER
FOR REMEDIAL DESIGN AND REMEDIAL ACTION

I. INTRODUCTION AND JURISDICTION

1. This Order directs Respondents to perform a remedial design for the remedy described in the Record of Decision for the NL Industries/Taracorp Site, dated March 30, 1990, and to implement the design by performing a remedial action. This Order is issued to Respondents by the United States Environmental Protection Agency ("EPA") under the authority vested in the President of the United States by section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9606(a). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580 (52 Fed. Reg. 2923, January 23, 1987), and was further delegated to EPA Regional Administrators on September 13, 1987 by EPA Delegation No. 14-14-B issued September 13, 1987,

and to the Director, Waste Management Division, Region V, on September 14, 1987, and January 5, 1989 by Delegation 14-14-B.

II. PARTIES BOUND

2. This Order shall apply to and be binding upon each Respondent identified in Attachment I and paragraph 9, its (their) successors, and assigns. Respondents are jointly and severally responsible for carrying out all activities required by this Order. Failure of one or more Respondents to comply with all or any part of this Order shall not in any way excuse or justify noncompliance by any other Respondents. No change in the ownership, corporate status, or other control of any Respondents shall alter any of the Respondents' responsibilities under this Order.

3. Respondents shall provide a copy of this Order to each contractor, sub-contractor, laboratory, or consultant retained to perform any Work under this Order, on the date such services are retained. Respondents shall also provide a copy of this Order to each person acting on behalf of any Respondents with respect to the Site or the Work. With regard to the activities undertaken pursuant to this Order, each contractor and subcontractor shall be deemed to be related by contract to the Respondents within the meaning of section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). Notwithstanding the terms of any contract, each Respondent is responsible for compliance with this Order and for ensuring that

its contractors, subcontractors and agents comply with this Order, and perform any Work in accordance with this Order.

4. Within five (5) days after the effective date of this Order, each Respondent that owns real property comprising all or part of the Site shall record a copy or copies of this Order in the appropriate governmental office where land ownership and transfer records are filed or recorded and shall ensure that the recording of said Order is indexed to the title of each and every parcel of property owned by said Respondent at the Site, so as to provide notice to third parties of the issuance and terms of this Order with respect to those properties. The Respondent shall, within 15 days after the effective date of this Order, send notice of such recording and indexing to EPA.

5. Not later than sixty (60) days prior to any transfer of any property interest in any real property included within the Site, the Respondent(s) responsible for the transfer shall notify EPA of the transfer, and shall identify the transferee by name, principal business address and effective date of the transfer.

III. DEFINITIONS

6. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in the statute or its implementing regulations. Whenever terms

listed below are used in this Order or in the documents attached to this Order or incorporated by reference into this Order, the following definitions shall apply:

a. "Area 1" shall mean the land designated area 1 in figure 9 of the SOW. This area includes the SLLR Piles and property owned or operated by Trust 454, SLLR, and BV & G Transport (Tri-City Trucking).

b. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9601 et seq.

c. "Day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the end of the next working day.

d. "EPA" or "U.S. EPA" shall mean the United States Environmental Protection Agency.

e. "Expanded Taracorp Pile" means the existing Taracorp Pile as it will be expanded by its consolidation with the St. Louis Lead Recyclers Piles and residential soils and battery case material added to the Taracorp Pile.

f. "Facility" or "Site" shall mean the NL Industries/ Taracorp Site, as described in the March 30, 1990 Record of Decision. The Site includes the location where treatment, storage, disposal or other placement of hazardous substances was derived from operations conducted by NL Industries, Inc. (formerly National Lead), Taracorp, Inc., or St. Louis Lead

Recyclers, whose operations are or were located in Granite City, Madison County, State of Illinois. "Facility" or "Site" shall also include, but is not limited to, areas 1-8, designated areas of Eagle Park Acres and Venice (as shown more particularly on the maps attached to the Record of Decision as Figures 5, 6, 7) and other areas where material from the Taracorp Pile or SLLR Piles has come to be located.

g. "IEPA" shall mean the Illinois Environmental Protection Agency.

h. "National Contingency Plan" or "NCP" shall mean the National Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, including any amendments thereto.

i. "Paragraph" shall mean a portion of this Order identified by an arabic numeral.

j. "Performance Standards" shall mean those cleanup standards, standards of control, and other substantive requirements, criteria or limitations, identified in the Record of Decision and Scope of Work, that the Remedial Action and Work required by this Order must attain and maintain. These standards include, but are not limited to: (1) a cleanup standard of 1000 ppm soil lead for Area 1, as described in figure 9 of the SOW; (2) a 500 ppm soil lead and battery case material cleanup standard for all Residential Areas containing concentrations of lead greater than 500 ppm (sampling to be conducted during the remedial design); (3) removal of all drums at the Taracorp Pile;

(4) excavation of battery case material at or near the surface of all alleys and driveways in Venice, Eagle Park Acres and other nearby communities where battery case material has come to be located (including areas in ROD Figures 6 and 7);
(5) construction of a RCRA compliant cap over the Expanded Taracorp Pile, and (6) implementation of air, groundwater and soil cover/cap monitoring and remediation, if necessary, as specified in the contingency plans, as approved by U.S. EPA.

k. "Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the Site signed on March 30, 1990 by the Regional Administrator, EPA Region V, and all attachments thereto, and which comprises Attachment II to this Order.

l. "Remedial Action" or "RA" shall mean those activities to be undertaken by Respondents to implement the final plans and specifications submitted by Respondents pursuant to the Work Plan, as approved by EPA, including any additional activities required under Sections IX, X, XX, XXI, and XXII of this Order.

m. "Remedial Construction" shall mean those activities comprising the RA, with the exception of operation and maintenance activities such as long term monitoring and implementation of contingency plans.

n. "Remedial Design" or "RD" shall mean those activities to be undertaken by Respondents to produce an approvable Work Plan.

o. "Residential Areas" means residential housing and any areas where children are routinely exposed to soils, such as

schools, parks, playgrounds and day care facilities within the Facility.

p. "St. Louis Lead Recyclers Piles" or "SLLR Piles" shall mean the waste piles which were created by or as a part of the operations of St. Louis Lead Recyclers, Inc.

q. "Scope of Work" or "SOW" shall mean the statement of work for implementation of the Remedial Design and Remedial Action at the Site, as set forth in Attachment III to this Order. The Scope of Work is incorporated into this Order and is an enforceable part of this Order.

r. "Section" shall mean a portion of this Order identified by a roman numeral and includes one or more paragraphs.

s. "Section 106 Administrative Record" shall mean the Administrative Record which includes all documents considered or relied upon by EPA in preparation of this Order. The Section 106 Administrative Record Index is a listing of all documents included in the Section 106 Administrative Record, and is attached hereto as Appendix A.

t. "State" shall mean the State of Illinois.

u. "Taracorp Pile" shall mean the waste pile on the Site created primarily by the operations of NL Industries, Inc. and/or Taracorp, Inc. (ROD figure 2).

v. "United States" shall mean the United States of America.

w. "Work" shall mean the design, construction and implementation, in accordance with this Order, of the tasks

described in this Order, the ROD, the Scope of Work, the Work Plan(s), and any other plans or schedules submitted and approved by U.S. EPA pursuant to this Order or the SOW. The following are the major components of the Work:

i. Installation of an upgraded security fence around the Expanded Taracorp Pile.

ii. Deed Restrictions and other institutional controls to ensure protection of the (Expanded) Taracorp Pile.

iii. Performance of soil lead sampling to determine which areas must be excavated and the extent of the excavation.

iv. Inspection of alleys and driveways and areas containing surficial battery case material in Venice, Eagle Park Acres, Granite City, Madison and other nearby communities to determine whether additional areas not identified in the Feasibility Study must be remediated as described below.

v. Installation of a minimum of one upgradient and three downgradient deep wells, monitoring of groundwater and air, and inspection and maintenance of the cap constructed over the Expanded Taracorp Pile.

vi. Removal and recovery of all drums on the Taracorp Pile at a secondary lead smelter.

vii. Consolidation of waste contained in an adjacent St. Louis Lead Recyclers Piles with the Taracorp Pile.

viii. Excavation and consolidation with the Taracorp Pile or off-site disposal of battery case material from all applicable alleys and driveways in Venice, Illinois, Eagle Park Acres, and any other nearby communities.

ix. Excavation and consolidation with the Taracorp Pile of all unpaved portions of adjacent Area 1 (see ROD Figures 2-4) with lead concentrations greater than 1000 ppm.

x. Excavation and consolidation with the Taracorp Pile or off-site disposal of all residential soils and battery case materials around the Site and in Venice, Eagle Park Acres, and other nearby communities with lead concentrations greater than 500 ppm.

xi. Inspection of the interiors of homes on property to be excavated to identify possible additional sources of lead exposure and recommend appropriate actions to minimize exposure.

xii. Implementation of dust control measures during all remedial construction activities.

xiii. Construction of a RCRA-compliant, multi-media cap over the Expanded Taracorp Pile and a clay liner under all newly-created portions of the Expanded Taracorp Pile.

xiv. Development and implementation of contingency plans to provide remedial action in the event that the concentration of contaminants in groundwater exceed applicable standards or established action levels, or

that waste materials or soils have become releasable to the air in the future.

xv. Development and implementation of contingency measures to provide for sampling and removal of any soils within the zone of contamination described by the soil lead sampling to be implemented above with lead concentrations above 500 ppm which are presently capped by asphalt or other barriers but become exposed in the future due to land use changes or deterioration of the existing use.

x. "Work Plan" shall mean the RD Work Plan and the RA Work Plan as they are defined in Section III. of the SOW.

IV. FINDINGS OF FACT

7. The NL Industries/Taracorp-Granite City, Illinois Site is located in and near Granite City, Illinois. The Site includes, in part, approximately 15.9 acres of property owned by Taracorp, Inc. (previously the property of NL Industries) located at 16th Street and Cleveland Avenue in Granite City, Illinois. Metal refining, fabricating, and associated activities have been conducted at the Site since before the turn of the century. Prior to 1903, the facilities at the Site included a shot tower, machine shop, factory for the manufacture of blackbird targets, sealing wax, manufacture of mixed metals, refining of drosses, and the rolling of sheet lead. Since 1903 facilities have been added to provide secondary smelting capabilities. Battery recycling facilities were installed in the 1950's.

The secondary smelting operations produced a number of products, including sheet lead, solder, shotgun lead pellets, lead wool, lead pipe, powdered lead, and secondary lead ingots. The major pieces of equipment involved in the secondary smelting activities include a blast furnace, rotary furnace, several lead melting kettles, a battery breaking operation, a natural gas-fired boiler, several baghouses, cyclones and an afterburner. Historically, solid wastes generated by the manufacturing facilities were stored on-Site in a slag storage area.

Property on the Site presently owned by Taracorp, Inc. was previously owned by the Hoyt Metal Company until 1903, when the United Lead Company purchased the property. NL Industries, Inc. (NL), formerly the National Lead Company, bought the property in 1928. In August, 1979 NL sold property on the Site to Taracorp. Taracorp operated the secondary smelting operation until 1983, when it filed for protection from its creditors under Chapter 11 of the Federal Bankruptcy Code. Taracorp continues to operate the metal refining and fabricating facilities at the Site.

8. a. Taracorp, Inc. is now, and has been since on or about August 1979 the owner and operator of a portion of the Facility. Respondents Trust 454 and BV & G Transport are also owners of a portion of the Facility.

b. Respondent NL Industries, Inc. was, from on or about 1928 until August 1979, the owner and operator of a portion of

the Facility. During that time hazardous substances, including some or all of those described in this Section, were disposed of at the Facility.

c. Respondent Trust 454 owned and continues to own land formerly used by Respondent SLLR at the Facility. During the time of SLLR's operations at the portion of the Facility operated by SLLR, hazardous substances, including some or all of those described in this Section, were disposed of at the Facility.

d. Respondents listed in attachment I of this Order, other than Respondent owner/operators, arranged, by contract or agreement, or otherwise, for the disposal or treatment of or arranged with a transporter for transport for disposal or treatment of hazardous substances owned or possessed by Respondents. Hazardous substances of the same kind as those owned or possessed by Respondents listed in attachment I were present at the Facility.

9. The respondents identified in paragraph 8 are collectively referred to as "Respondents."

10. In May 1986, (51 Fed. Reg. 21054, June 10, 1986), pursuant to section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the NL Industries/Taracorp Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B.

11. From about June, 1985, to about January 10, 1990, NL Industries, under EPA's oversight, undertook a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to CERCLA and the National Contingency Plan, 40 C.F.R. Part 300. An Addendum to the Feasibility Study was prepared by EPA and issued on January 10, 1990.

12. Pursuant to section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS and of the proposed plan for remedial action on January 10, 1990, and provided opportunity for public comment on the proposed remedial action. Similarly, Respondents were given an opportunity to comment on the proposed plan for Remedial Action and to supplement the Administrative Record.

13. The decision by EPA on the remedial action to be implemented at the NL Industries/Taracorp Site is embodied in a final Record of Decision ("ROD"), executed on March 30, 1990, on which the State has given its concurrence. The ROD is made a part of this Order and is attached as Attachment II. The Record of Decision is supported by an Administrative Record that contains the documents and information upon which EPA based the selection of the response action. The U.S. EPA's selected response action set out in the ROD has been determined to provide adequate protection of public health, welfare and the environment; meet all Federal and State environmental laws; and be cost effective.

14. Hazardous substances at the Site include lead, cadmium, arsenic, nickel, antimony, barium, chromium, mercury, and zinc. The hazardous substances are commingled.

15. RI data indicates that there is a release or threatened release of hazardous substances from the Site. Three wells (101, 108S, 108D) consistently demonstrated elevated concentrations of several parameters with respect to background wells. Average concentrations in well 101 were arsenic - .079 mg/l and zinc - .039 mg/l. The levels of cadmium in wells 108S and 108D and zinc in well 108D exceed the Illinois General Use Water Quality Standards of .05 mg/l and 1.0 mg/l, respectively. Concentrations of contaminants in samples from the Taracorp Pile were as follows:

antimony	410-6400 ppm;
arsenic	130-12,000 ppm;
barium	115-1097 ppm;
cadmium	6-640 ppm;
chromium	less than 5-36 ppm;
lead	15,000-279,000 ppm;
mercury	less than 0.5-1.6 ppm;
nickel	6.5-423 ppm;
zinc	15.3-13,840 ppm.

Six out of seven samples taken from the Taracorp Pile were EP Toxic for lead; one was EP Toxic for cadmium. Contaminant concentrations in samples taken from drummed materials on the Taracorp Pile were as follows:

lead	237,000 and 273,000 ppm;
cadmium	non-detectable and 2,700 ppm.

EP Toxicity results demonstrate that the drummed waste was EP Toxic for cadmium and lead.

Concentrations of contaminants in samples taken from the St. Louis Lead Recyclers (SLLR) Piles were as follows:

antimony	200-2,900 ppm;
arsenic	5.6-4,100 ppm;
cadmium	15-7,000 ppm;
lead	105,000-286,000 ppm;
zinc	383-42,100 ppm.

EP Toxicity results demonstrate that the SLLR Piles are EP Toxic for lead.

Concentrations of lead in soil grid samples ranged from 136-9,250 ppm for the samples taken from 0 to 3 inches in depth and 45-48,400 ppm for 3 to 6 inch depth samples. Lead concentrations in remote fill area samples ranged from 200-126,000 ppm in Venice alleys, and 63-3,280 ppm for 0 to 3 inch depth samples and 91-4,030 ppm for 3 to 6 inch depth samples taken in Eagle Park Acres, Illinois. Concentrations of lead in sediment samples taken near the Taracorp Pile ranged from 13,640 - 148,600 ppm.

Data taken from the IEPA indicates that quarterly averages for 1986 for lead in ambient air ranged from 0.13-0.44 ug/m^3 in monitors located near the Site.

16. The hazardous substances have and may continue to migrate through the air in the form of airborne emissions or dust. Migration through the groundwater in the form of a contaminant plume has not presently been shown to be occurring anywhere except immediately adjacent to the Taracorp Pile.

Possible routes of exposure to the hazardous substances are direct contact with and ingestion of soils, hard rubber fill, or sediments and inhalation of airborne contaminants emanating from present plant operations, the waste piles, and contaminated soils. Ingestion of contaminated ground water is a potential future exposure pathway.

17. The following is a very brief summary of relevant acute toxic effects of some of the hazardous substances (some chronic effects are also noted for lead):

LEAD

Lead is primarily a chronic, accumulative poison, producing many effects, especially on the central nervous system. Children are most susceptible, even before birth, and learning deficiencies seem to be the minimal toxic effect. Acute doses cause fatigue, sleep disturbances, gastrointestinal irritation (colic, constipation, vomiting), and some nerve effects.

CADMIUM

Cadmium is an element with a complex coordination chemistry. In non-aqueous environments it usually exists as a dust. Its compounds are highly toxic by ingestion, and cumulative effects may appear post exposure.

ANTIMONY

The toxicity of antimony appears to be similar to arsenic, although there is no evidence of carcinogenicity for antimony. In humans, antimony is acutely irritating to the gastrointestinal tract following ingestion. Antimony can also affect the heart, skin, respiratory tract and liver. The primary cardiac effects are altered electrocardiograms, bradycardia, and lowered blood pressure. Little information is available concerning the dose response relationship in humans.

ARSENIC

A high oral intake of arsenic can produce death. Low levels of exposure by ingestion may produce injury to a number of different body tissues and systems - irritation of the digestive tract, decreased production of red and white blood cells, abnormal heart function, blood vessel damage, liver and/or kidney injury and impaired nerve function. Evidence from animal data indicates that high oral doses during pregnancy may be damaging to the fetus, but this has not been well studied in humans. The most characteristic systemic effect of oral exposure to inorganic arsenic is a pattern of skin abnormalities, including the appearance of dark and light spots on the skin and small "corns" on the palms, soles and trunk. Some of the corns may progress to skin cancer. Arsenic ingestion has also been reported to increase the risk of other cancers within the body, especially cancers of the liver, kidney and lungs.

BARIUM

Barium is highly toxic to the heart, blood vessels, and nerves when soluble salts are ingested. Barium enters the body primarily through the air and water, since essentially no food of consistent daily consumption contains barium in appreciable amounts. Barium is recognized as a general muscle stimulant and exerts a strong, prolonged stimulant action on all muscles, including cardiac and smooth muscle of the intestinal tract and bladder. Barium is capable of causing nerve block and in small or moderate doses produces a transient increase in blood pressure by vasoconstriction. Potassium deficiency occurs in acute poisoning, and treatment with intravenous potassium appears beneficial. There is no evidence found to suggest that barium exerts any carcinogenic effects by oral or dermal exposure.

CHROMIUM

Chromium is a heavy metal that generally exists in either a trivalent or hexavalent oxidation state. Hexavalent chromium (Cr VI) is rather soluble and is quite mobile in groundwater and surface water. In the presence of reducing agents, however, it is rapidly converted to trivalent chromium (CR III), which is strongly adsorbed to soil components and consequently is much less mobile. A number of salts of hexavalent chromium are carcinogenic in rats. In addition, increased incidences of lung cancer have been seen in several studies of workers occupationally exposed to chromium VI. Hexavalent chromium also

causes kidney damage in animals and humans. Trivalent chromium is less toxic than hexavalent chromium; its main effect is contact dermatitis in sensitive individuals.

MERCURY

Ingestion of inorganic mercury salts by humans is often associated with severe renal disorders. Acute inhalation exposure in humans to metallic mercury has resulted in central nervous system effects, cardiovascular effects, gastrointestinal effects, hematological effects, musculoskeletal effects, dermal effects, hepatic effects and renal effects. At low levels of exposure the major target organs are the kidneys and the central nervous system. Mercury has not yet been determined to be a carcinogen.

NICKEL

Nickel is irritating at the point of contact. It is a powerful allergic sensitizer. Nickel is an essential trace mineral for some domestic animals, although toxic at higher doses.

ZINC

Zinc is a metallic element that can exist in several forms in surface waters, its ionic concentration is usually very small due to its ability to complex with organics and absorb and precipitate on solids. As zinc chloride, it is a non-combustible white powder or colorless crystals that are extremely irritating

to the skin, eyes, nose and throat. As zinc chromate, it is sparingly soluble in water, and thus more likely to produce cancer of the respiratory passages than other water soluble chromates. As a fume, it can exist as zinc oxide.

18. The remedy selected in the ROD includes the following major components:

- Installation of an upgraded security fence around the Expanded Taracorp Pile.
- Deed Restrictions and other institutional controls to ensure protection of the Taracorp Pile.
- Performance of soil lead sampling to determine which areas must be excavated and the extent of the excavation.
- Inspection of alleys and driveways and areas containing surficial battery case material in Venice, Eagle Park Acres, Granite City, Madison and other nearby communities to determine whether additional areas not identified in the Feasibility Study must be remediated as described below.
- Performance of blood lead sampling to provide the community with current data on potential acute health effects associated with Site contamination.
- Installation of a minimum of one upgradient and three downgradient deep wells, monitoring of groundwater and air, and inspection and maintenance of the cap.
- Removal and recovery of all drums on the Taracorp Pile at a secondary lead smelter.
- Consolidation of waste contained in adjacent St. Louis Lead Recyclers Piles with the Taracorp Pile.
- Excavation and consolidation with the Taracorp Pile or off-site disposal of battery case material from all applicable alleys and driveways in Venice, Illinois, Eagle Park Acres, and other nearby communities where the battery case material has come to be located.

- Excavation and consolidation with the Taracorp Pile of all unpaved portions of adjacent Area 1 (see Figure) with lead concentrations greater than 1000 ppm.

- Excavation and consolidation with the Taracorp Pile or off-site disposal of all residential soils and battery case materials around the Site and in Venice, Eagle Park Acres, and other nearby communities with lead concentrations greater than 500 ppm.

- Inspection of the interiors of homes on property to be excavated to identify possible additional sources of lead exposure and recommend appropriate actions to minimize exposure.

- Implementation of dust control measures during all remedial construction activities.

- Construction of a RCRA-compliant, multi-media cap over the Expanded Taracorp Pile and a clay liner under all newly-created portions of the Expanded Taracorp Pile.

- Development of contingency plans to provide remedial action in the event that the concentration of contaminants in groundwater or lead or PM_{10} (particulate matter greater than 10 microns) in air exceed applicable standards or established action levels, or that waste materials or soils have become releasable to the air in the future.

- Development of contingency measures to provide for sampling and removal of any soils within the zone of contamination described by the soil lead sampling to be implemented above with lead concentrations above 500 ppm which are presently capped by asphalt or other barriers but become exposed in the future due to land use changes or deterioration of the existing use.

The Record of Decision, in its entirety, comprises Attachment II to this Order.

19. The selected remedy will be adequately protective of human health and the environment. Removal of soils and battery case materials in residential areas above 500 ppm lead, soils and waste materials in Area 1 above 1000 ppm, and battery case

materials in alleys and driveways, and restoration through applications of sod, paving, etc. will eliminate direct contact with and inhalation of dust and lead-contaminated soils and waste materials which may create a risk to human health and the environment. Inspection of the interiors of homes and providing residents with recommendations to minimize exposure to potential indoor contamination will add an additional measure of reduction of direct contact and inhalation of dust and contaminated soils. Consolidation of the SLLR Piles and soils and waste materials removed from the excavations described above with the Taracorp Pile and capping of the Expanded Taracorp Pile, or off-site disposal of the above mentioned soils and waste materials, will bring all contaminated materials to a central location and provide a barrier against direct contact and dust generation from the soils and waste materials. The cap, along with the bottom liner to be constructed under all newly-created portions of the Expanded Taracorp Pile, will also provide a barrier against leaching of contaminants from the Expanded Taracorp Pile. Transporting TCLP toxic soils and battery case material from Venice, Eagle Park Acres, and other nearby communities to a RCRA-compliant landfill or treating these soils prior to placement in the Taracorp Pile will also provide proper management of these materials to provide a barrier against direct contact and dust generation and leaching of contaminants into the groundwater.

Additional measures to prevent exposure to contaminated waste materials and soil included in the selected remedy are: Site fencing and institutional controls; groundwater, air, and cap monitoring and associated contingency plans; and establishment of contingency measures to provide for appropriate disposal of soils within the zone of contamination with lead concentrations above 500 ppm which become available for direct contact in the future. Removal of drums on the Taracorp Pile will allow these waste materials to be recycled in a secondary lead smelter. Finally, a blood lead study will provide current, useful information to residents in the vicinity of the Site with respect to any acute health effects that may be present due to exposure to the contaminated soils and waste materials at and around the Site.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

20. The NL Industries/Taracorp Site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

21. Respondents are "person[s]" as defined in section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

22. Respondents are "liable parties" as defined in section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and are subject to this Order under section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

23. The substances listed in paragraph 14 are found at the Site and are "hazardous substances" as defined in section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

24. These hazardous substances have been and threaten to be "release[d]" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22), from the Facility into the soil, groundwater, surface water, air, homes and buildings.

25. The past disposal and migration of hazardous substances from the Facility constitutes a "release". The potential for future migration of hazardous substances from the Site poses a threat of a "release" as defined in section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

26. The release and threat of release of one or more hazardous substances from the Facility is or may be presenting an imminent and substantial endangerment to the public health or welfare or the environment.

27. The contamination and endangerment at this Site constitutes an indivisible injury. The actions required by this Order are necessary to protect the public health, welfare, and the environment and are consistent with the National Contingency Plan (NCP), 40 CFR Part 300, as amended, and CERCLA.

VI. NOTICE TO THE STATE

28. Prior to issuing this Order, EPA notified the State of Illinois that EPA intended to issue this Order. EPA will consult with the State and the State will have the opportunity to review and comment to EPA regarding all work to be performed, deliverables, and any other issues which arise while this Order remains in effect.

VII. ORDER

29. Based on the foregoing, each Respondent is hereby ordered to comply with all of the following provisions, including but not limited to all Attachments to this Order, all documents incorporated by reference into this Order, and all schedules and deadlines contained in this Order, attached to this Order, or incorporated by reference into this Order.

VIII. NOTICE OF INTENT TO COMPLY

30. On or before the effective date of this Order, each Respondent must submit to EPA's RPM written notice stating its unequivocal intention to comply with the terms of this Order. In the event any Respondent fails to provide such written notice, that Respondent shall be deemed to have failed to comply with this Order. Each Respondent's written notice shall describe, using facts that exist on or prior to the effective date of this Order, any "sufficient cause" defenses asserted by Respondent(s) under sections 106(b) and 107(c)(3) of CERCLA. The absence of a

response by EPA to the notice required by this paragraph shall not be deemed to be acceptance of Respondent's assertions.

IX. WORK TO BE PERFORMED

31. Based on the foregoing Findings of Facts and Determinations, and pursuant to Section 106(a) of CERCLA, 42, U.S.C. 9606(a), it is hereby Ordered that Respondents, and each of them, undertake the following actions at the Facility and vicinity:

32. a. Within forty-five (45) days of the effective date of this Order, the Respondents shall submit to U.S. EPA and IEPA an RD Work Plan for the remedial activities Ordered as set forth in the SOW. The RD Work Plan shall provide a concise description of the activities to be conducted and schedules for completion to comply with the requirements of this Order. The RD Work Plan shall be reviewed and either approved, disapproved or modified by U.S. EPA, in consultation with IEPA, to cure deficiencies in the RD Work Plan. If the RD Work Plan is disapproved, U.S. EPA will provide, in writing, specific comments or modifications required for approval. Respondents shall incorporate these comments and then, within thirty (30) days of the date of U.S. EPA's written notification of disapproval, submit an approvable RD Work Plan which incorporates only the required modifications. U.S. EPA shall, in consultation with IEPA, review the RD Work Plan and either approve or disapprove it. Failure to submit an approvable RD Work Plan shall constitute noncompliance with this Order.

Respondents shall implement the RD Work Plan as approved by U.S. EPA. Unless otherwise directed by EPA, Respondents shall not perform further Work at the Site prior to EPA's written approval of the RD Work Plan.

b. Within one hundred and fifty (150) days of U.S. EPA's approval of the RD Work Plan, the Respondents shall submit the RA Work Plan to U.S. EPA and IEPA. The RA Work Plan shall provide a concise description of the activities to be conducted and schedules for completion to comply with the requirements of this Order. The RA Work Plan shall be reviewed and either approved, disapproved or modified by U.S. EPA, in consultation with IEPA, to cure deficiencies in the RA Work Plan. If the RA Work Plan is disapproved, U.S. EPA will provide, in writing, specific comments or modifications required for approval. Respondents shall incorporate these comments and then, within sixty (60) days of the date of U.S. EPA's written notification of disapproval, submit an approvable RA Work Plan which incorporates only the required modifications. U.S. EPA shall, in consultation with IEPA, review the RA Work Plan and either approve or disapprove it. Failure to submit an approvable RA Work Plan shall constitute noncompliance with this Order. Respondents shall implement the RA Work Plan as approved by U.S. EPA. Unless otherwise directed by EPA, Respondents shall not perform further Work at the Site prior to EPA's written approval of the RA Work Plan.

33. The Work Plan (RD and RA Work Plans) shall include methodologies, plans and schedules for completing the remedial design and remedial action for the remedy described in the ROD and for attaining and maintaining all requirements, including Performance Standards, identified in the ROD and SOW. The Work Plan shall be developed in conformance with the ROD, the SOW, U.S. EPA's "Superfund Remedial Design and Remedial Action Guidance, OSWER Directive 9355.0-4A" and any additional guidance documents provided by U.S. EPA. A Health and Safety Plan/Emergency Contingency Plan shall be prepared in accordance with the Occupational Safety and Health Administration (OSHA) regulations applicable to Hazardous Waste Operations and Emergency Response, 29 CFR Part 1910. The Work Plan and other submitted documents shall demonstrate that the Respondents can properly conduct the actions required by this Order.

34. Respondents shall implement the RD Work Plan and the RA Work Plan as each is approved or modified by U.S. EPA and in accordance with the schedules contained therein. Failure of the Respondents to properly implement and complete all aspects of the Work Plan shall be deemed to be noncompliance of the terms of this Order. All Work shall be conducted in accordance with the National Contingency Plan, the U.S. EPA Superfund Remedial Design and Remedial Action Guidance, and the requirements of this Order, including the standards, specifications and schedules contained in the Work Plan.

35. The Work Plan, as approved or modified by U.S. EPA, including all schedules contained therein, shall be considered an integral and enforceable element of this Order.

36. Respondent(s) shall, prior to any off-Site shipment of hazardous substances from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to EPA's RPM of such shipment of hazardous substances. However, the notification of shipments to the State shall not apply to any off-Site shipments when the total volume of all shipments from the Site to the State will not exceed ten (10) cubic yards.

a. The notification shall be in writing, and shall include the following information, where available: (1) the name and location of the facility to which the hazardous substances are to be shipped; (2) the type and quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondent(s) shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility within the same state, or to a facility in another state.

b. All hazardous substances removed from the Facility or vicinity shall be disposed of or treated at a facility approved by EPA's RPM and in compliance with the Resource Conservation and

Recovery Act of 1976 (RCRA), 42 U.S.C. Section 6901, et seq., as amended; the EPA Revised Off-Site Policy; and all other applicable Federal, State and local requirements. The identity of the receiving facility and state will be determined by Respondents following the award of the contract for Remedial Action construction. Respondents shall provide all relevant information, including information under the categories noted in paragraph a. above, on the off-Site shipments as soon as practicable after the award of the contract and before the hazardous substances are actually shipped.

37. Respondents shall retain a contractor qualified to undertake and complete the requirements of this Order, and shall notify U.S. EPA of the name of such contractor within fifteen days of the Effective Date of this Order. U.S. EPA retains the right to disapprove of any, or all, of the contractors and/or subcontractors retained by the Respondents. In the event U.S. EPA disapproves of a selected contractor, Respondents shall retain a different contractor to perform the Work, and such selection shall be made within seven (7) days following receipt U.S. EPA's disapproval.

X. QUALITY ASSURANCE

38. Respondent(s) shall use the quality assurance, quality control, and chain of custody procedures described in the "EPA NEIC Policies and Procedures Manual," May 1978, revised May 1986.

EPA-330/9-78-001-R, EPA's "Guidelines and Specifications for Preparing Quality Assurance Program Documentation," June 1, 1987, EPA's "Data Quality Objective Guidance," (EPA/540/G87/003 and 004), and any amendments to these documents, while conducting all sample collection and analysis activities required herein by any plan. Respondents shall use only laboratories which have a documented Quality Assurance Program that complies with EPA guidance document QAMS-005/80 and subsequent amendments. Respondents shall ensure that the laboratory used by the Respondents for analyses performs according to a method or methods deemed satisfactory to EPA. Prior to the commencement of any sampling and analysis under this Order, and as part of the Work Plan, Respondents shall submit a Quality Assurance Project Plan (QAPP) to U.S. EPA and IEPA that is consistent with the SOW, the Work Plan, and "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (QAM-005/80) and subsequent amendments. Prior to the development and submittal of a QAPP, Respondents shall attend a pre-QAPP meeting sponsored by U.S. EPA to identify all monitoring and data quality objectives.

39. Respondents shall ensure that U.S. EPA personnel or authorized representatives are allowed access to any laboratory used by the Respondents to implement the Order. Respondents shall ensure that any such laboratory will analyze samples submitted by U.S. EPA for quality assurance monitoring.

XI. ACCESS, SAMPLING, AND DOCUMENT AVAILABILITY

40. To the extent that the Facility or other areas where work under this Order is to be performed is under ownership or possession by someone other than the Respondents, Respondents shall obtain all necessary access agreements within thirty (30) days of approval of the Work Plan. In the event that after using their best efforts Respondents are unable to obtain such agreements, Respondents shall notify U.S. EPA. U.S. EPA, at its discretion, may either assist Respondents in gaining access, or proceed with implementation of the Work.

41. Respondents shall provide access to the Facility to U.S. EPA and IEPA employees, contractors, agents, and consultants, at all reasonable times, and shall permit such persons to be present and move freely in the area in order to conduct inspections, take photographs and videotapes, do cleanup or stabilization work, take samples, monitor the work, and conduct any other activities which the U.S. EPA determines to be necessary.

42. Respondents shall make available to U.S. EPA and IEPA the results of all sampling and test or other data generated by the Respondents with respect to the implementation of this Order, and shall submit these results in monthly progress reports as described in Section XIII of this Order.

43. At the request of U.S. EPA or IEPA, the Respondents shall allow split or duplicate samples to be taken by U.S. EPA, the IEPA, or their authorized representatives, of any samples collected by the Respondents pursuant to implementation of this Order. The Respondents shall notify U.S. EPA and IEPA not less than fourteen (14) days in advance of any sample collection activity. In addition, U.S. EPA and the IEPA shall have the right to take any additional samples that U.S. EPA or IEPA deem necessary.

XII. REMEDIAL PROJECT MANAGER/PROJECT COORDINATORS

44. On or before the effective date of this Order, the Respondents shall designate a Project Coordinator and provide EPA with the Project Coordinator's name, address, and telephone number. The U.S. EPA has designated Brad Bradley of the Remedial and Enforcement Response Branch, Illinois/Indiana Section as its Remedial Project Manager (RPM) and Beverly Kush as the Alternate RPM. The RPM shall have all the authority vested in an On Scene Coordinator and RPM by the NCP, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other response action undertaken by U.S. EPA or the Respondents at the Facility. The RPM and the Project Coordinator shall be responsible for overseeing the implementation of this Order.

45. To the maximum extent possible, communications between the Respondents and the U.S. EPA, all documents, reports and approvals, and all other correspondence concerning the activities relevant to this Order, shall be directed through the RPM and the Project Coordinator. Respondents shall submit to EPA three copies of all documents, which are developed pursuant to this Order.

46. The directions of the RPM, or his designated alternate, shall be binding upon the employees, agents, successors and assigns of the Respondents, as long as those directions are not inconsistent with the NCP or this Order.

47. The U.S. EPA and the Respondents shall have the right to change their respective designated RPM, Alternate RPM, or Project Coordinator. Notice of such a change shall be given as early as possible before such a change, but in no case shall Respondents give notice to U.S. EPA less than 24 hours before such a change.

XIII. PROGRESS REPORTS

48. In addition to the other deliverables set forth in this Order, Respondents shall provide monthly progress reports to EPA with respect to actions and activities undertaken pursuant to this Order. The progress reports shall be submitted on or before the tenth day of each month following the effective date of this Order. Respondents' obligation to submit progress reports

continues until EPA gives Respondents written notice under Section XXIV of this Order. At a minimum these progress reports shall: (1) describe the actions which have been taken to comply with this Order during the prior month; (2) include all results of sampling and tests and all other data received by Respondents and not previously submitted to EPA; (3) describe all work planned for the next month with schedules relating such work to the overall project schedule for completion of the Work; and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

XIV. COMPLIANCE WITH APPLICABLE LAWS

49. All activities by Respondents pursuant to this Order shall be performed in accordance with the requirements of all Federal and state laws and regulations. EPA has determined that the activities contemplated by this Order are consistent with the National Contingency Plan (NCP).

50. Except as provided in section 121(e) of CERCLA and the NCP, no permit shall be required for any portion of the Work conducted entirely on-Site. Where any portion of the Work requires a Federal or state permit or approval, Respondents shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits or approvals.

51. This Order is not, and shall not be construed to be, a permit issued pursuant to any Federal or state statute or regulation.

XV. DELAY IN PERFORMANCE

52. Any delay in performance of this Order that, in EPA's judgment, is not properly justified by Respondents under the terms of this Section shall be considered a violation of this Order. Any delay in performance of this Order shall not affect Respondents' obligations to fully perform all obligations under the terms and conditions of this Order.

53. Respondents shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to EPA's RPM or Alternate RPM within forty eight (48) hours after Respondents first knew or should have known that a delay might occur. Respondents shall adopt all reasonable measures to avoid or minimize any such delay. Within five (5) business days after notifying EPA by telephone, Respondents shall provide written notification fully describing the nature of the delay, any justification for delay, any reason why Respondents should not be held strictly accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that will be taken to mitigate the effect of the delay. Increased costs or

expenses associated with implementation of the activities called for in this Order is not a justification for any delay in performance.

XVI. RETENTION AND AVAILABILITY OF INFORMATION

54. The Respondents shall make available to U.S. EPA and IEPA and shall retain during the pendency of this Administrative Order, and for six years after termination of this Order, all records and documents which relate to Respondents' compliance with this Order, including, but not limited to, documents reflecting the results of any sampling, tests, or other data or information generated or acquired by the Respondents or on behalf of the Respondents. At the conclusion of the six year period following termination of this Order, the Respondents shall provide written notice to U.S. EPA and the IEPA at least 90 days prior to the destruction of any such documents, and upon request by U.S. EPA or IEPA, the Respondents shall relinquish custody of the documents to U.S. EPA or the IEPA. The documents shall be delivered to EPA or IEPA at no cost to the requesting Agency.

55. Subject to the provisions of Section XVI, paragraph 57 below, the Respondents may assert business confidentiality claims covering part or all of the documents and information provided in connection with this Administrative Order in accordance with

Section 104(e)(7)(F) of CERCLA, 42 U.S.C. 9604(e)(7)(F) and applicable state law.

56. Documents and information determined to be confidential by U.S. EPA will be afforded the protection specified in 40 CFR Part 2, Subpart B and, if determined to be entitled to confidential treatment under state law by IEPA, afforded protection under state law by IEPA. If no such claim accompanies the documents or information when it is submitted to the U.S. EPA and IEPA, the public may be given access to such information without further notice to the Respondents.

57. Information and documents generated by the Respondents in performance of the Work required by this Order that is subject to the provisions of Section 104 (e)(7)(F) of CERCLA, 42 U.S.C. 9604(e)(7)(F), shall not be claimed as confidential by the Respondents.

XVII. OTHER CLAIMS

58. U.S. EPA and IEPA are not to be construed as parties to, and do not assume any liability for, any contract entered into by the Respondents in carrying out the activities pursuant to this Order. The proper completion of the Work under this Order is solely the responsibility of the Respondents.

XVIII. NOTICE

59. Whenever, under the terms of this Administrative Order, notice is required to be given, or a report or other document is required to be forwarded by one party to another, such correspondence shall be directed to the following individuals at the addresses specified below:

<u>As to the United States or U.S. EPA:</u>

a. Brad Bradley
Remedial Project Manager
U.S. EPA, 5HS-11
230 South Dearborn Street
Chicago, Illinois 60604

b. Steven Siegel
Assistant Regional Counsel
U.S. EPA, 5CS-TUB-3
230 South Dearborn Street
Chicago, Illinois 60604

<u>As to the IEPA or Illinois</u>

Steve Davis
Project Manager
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

XIX. CONSISTENCY WITH NATIONAL CONTINGENCY PLAN

60. The U.S. EPA has determined that the Work, if properly performed as set forth in this Order, is consistent with the provisions of the National Contingency Plan, in accordance with 42 U.S.C. 9605.

XX. ENFORCEMENT AND RESERVATIONS

61. EPA reserves the right to bring an action against Respondent(s) under section 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Order and not reimbursed by Respondent(s). This

reservation shall include but not be limited to past costs, direct costs, indirect costs, the costs of oversight, other enforcement costs, the costs of compiling the cost documentation to support oversight cost demands, as well as accrued interest as provided in section 107(a) of CERCLA.

62. Notwithstanding any other provision of this Order, at any time during the response action, EPA may perform its own studies, complete the response action (or any portion of the response action) as provided in CERCLA and the NCP, and seek reimbursement from Respondent(s) for its costs, or seek any other appropriate relief.

63. Nothing in this Order shall preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, and/or additional remedial or removal actions as EPA may deem necessary, or from requiring Respondent(s) in the future to perform additional activities pursuant to CERCLA, 42 U.S.C. § 9606(a), et seq., or any other applicable law. Respondent(s) shall be liable under CERCLA section 107(a), 42 U.S.C. § 9607(a), for the costs of any such additional actions.

64. Notwithstanding any provision of this Order, the United States hereby retains all of its information gathering,

inspection and enforcement authorities and rights under CERCLA, RCRA and any other applicable statutes or regulations.

65. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person for any liability it may have arising out of or relating in any way to the Site.

66. If a court issues an order that invalidates any provision of this Order or finds that Respondent(s) has sufficient cause not to comply with one or more provisions of this Order, Respondent(s) shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XXI. MODIFICATIONS TO WORK

67. Except as provided for herein, there shall be no modification of this Administrative Order without written approval of U.S. EPA.

68. EPA may determine that modifications to the Work identified in this Order and attachments to this Order may be necessary to achieve the performance goals in the ROD. If EPA determines that modifications to the Work are necessary, EPA may require Respondent(s) to submit a Work Plan for additional response activities. EPA may also require Respondent(s) to modify any

plan, design, or other deliverable required by this Order, including any approved modifications.

69. Not later than thirty (30) days after receiving EPA's notice that additional response activities are required pursuant to this Section, Respondent(s) shall submit a Work Plan for the response activities to EPA for review and approval. Upon approval by EPA, the Work Plan is incorporated into this Order as a requirement of this Order and shall be an enforceable part of this Order. Upon approval of the Work Plan by EPA, Respondents shall implement the Work Plan according to the standards, specifications, and schedule in the approved Work Plan. Respondents shall notify EPA of their intent to perform such additional response activities within seven (7) days after receipt of EPA's request for additional response activities.

XXII. ENDANGERMENT AND EMERGENCY RESPONSE

70. In the event of any action or occurrence during the performance of the Work which causes or threatens to cause a release of a hazardous substance or which may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action to prevent, abate, or minimize the threat, and shall immediately notify EPA's Remedial Project Manager (RPM) or, if the RPM is unavailable, EPA's Alternate RPM. If neither of these persons is available Respondents shall notify the EPA Emergency and

Enforcement Response Branch, Region V. Respondent(s) shall take such action in consultation with EPA's RPM and in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan/Emergency Contingency Plan.

71. Nothing in the preceding paragraph shall be deemed to limit any authority of the United States to take, direct, or order all appropriate action to protect human health and the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances on, at, or from the Site.

XXIII. EFFECTIVE DATE AND TERMINATION

72. This Order shall become effective forty-five (45) days from the date of its issuance.

73. Within thirty (30) days after Respondent(s) conclude that the Remedial Construction has been fully performed, Respondent(s) shall so notify EPA and shall schedule and conduct a pre-certification inspection to be attended by Respondents and EPA. The pre-certification inspection shall be followed by a written report submitted within thirty (30) days of the inspection by a registered professional engineer and Respondents' Project Coordinator certifying that the Remedial Construction has been completed in full satisfaction of the requirements of this Order. If, after completion of the pre-certification inspection and receipt and review of the written report, EPA determines that the

Remedial Construction or any portion thereof has not been completed in accordance with this Order, EPA shall notify Respondent(s) in writing of the activities that must be undertaken to complete the Remedial Construction and shall set forth in the notice a schedule for performance of such activities. Respondent(s) shall perform all activities described in the notice in accordance with the specifications and schedules established therein. If EPA concludes, following the initial or any subsequent certification of completion by Respondent(s) that the Remedial Construction has been fully performed in accordance with this Order, EPA may notify Respondent(s) that the Remedial Construction has been fully performed. EPA's notification shall be based on present knowledge and Respondents' certification to EPA, and shall not limit EPA's right to perform periodic reviews pursuant to section 121(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the Site, in accordance with 42 U.S.C. §§ 9604, 9606, or 9607.

74. Within thirty (30) days after Respondents conclude that all phases of the Remedial Action have been fully performed, Respondents shall submit to EPA a written report by a registered professional engineer certifying that the Work has been completed in full satisfaction of the requirements of this Order. EPA shall require such additional activities as may be necessary to complete the Work or EPA may, based upon present knowledge and

Respondents' certification to EPA, issue written notification to Respondent(s) that the Work has been completed, as appropriate, in accordance with the procedures set forth above in Paragraph 78 for Respondents' certification of completion of the Remedial Construction. EPA's notification shall not limit EPA's right to perform periodic reviews pursuant to section 121(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or require any action that in the judgment of EPA is appropriate at the Site, in accordance with 42 U.S.C. §§ 9604, 9606, or 9607.

XXIV. UNITED STATES NOT LIABLE

75. The United States, by issuance of this Order, assumes no liability for any injuries or damages to persons or property resulting from acts or omissions by Respondent(s), or its (their) directors, officers, employees, agents, representatives, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order. Neither EPA nor the United States may be deemed to be a party to any contract entered into by Respondent(s) or its (their) directors, officers, employees, agents, successors, assigns, contractors, or consultants in carrying out any action or activity pursuant to this Order.

XXV. ACCESS TO ADMINISTRATIVE RECORD

76. The Section 106 Administrative Record supporting the above Findings of Fact and Determinations is available for review on

normal business days between the hours of 9:00 a.m. and 5:00 p.m. at the U.S. EPA, Region V, 230 South Dearborn Street, Chicago, Illinois. Please contact Mr. James Bell, Administrative Record Specialist, at (312) 353-7446 to review the Administrative Record at this location. An Index of the Administrative Record is attached hereto as Appendix A.

XXVI. OPPORTUNITY TO CONFER

77. Respondents may, within seven (7) days of the date of issuance of this Order, request a conference with U.S. EPA to discuss this Order. If requested, the conference shall occur within fourteen (14) days of the date of issuance of this Order or at such reasonable time thereafter as agreed in writing by U.S. EPA but no later than 30 days from the date of issuance of this Order by U.S. EPA. At any conference held pursuant of the request, Respondents may appear in person and/or by an attorney or other representative. If any Respondent desires such a conference, please contact Mr. Steven Siegel at (312) 353-1129.

78. The purpose and scope of the conference shall be limited to issues involving the implementation of the response actions required by this Order, the extent to which Respondents intend to comply with this Order, and the Order's applicability to Respondents. In no event shall any action taken or not taken by U.S. EPA pursuant to any such conference be deemed to constitute

a final agency action for purposes of judicial review. No stenographic record of the conference will be made.

79. Any comments regarding this Order, its applicability to Respondents, the correctness of any factual determinations upon which the Order is based, the appropriateness of any action which Respondents are ordered to undertake, or any other relevant and material issue must be reduced to writing and received by U.S. EPA within twenty-one (21) days following the date of issuance of this Order or within five days from the occurrence of the conference described in paragraph 77, whichever is later. Any such writing should be directed to Brad Bradley at the address cited above.

XXVII. PENALTIES FOR NONCOMPLIANCE

80. Respondents are advised, pursuant to Section 106(b) of CERCLA, 42 U.S.C. 9606(b), that willful violation of, or failure or refusal to comply with this Order or any portion thereof, may subject the Respondents to a civil penalty of not more than $25,000 for each day in which such violation occurs or such failure to comply continues. Failure to comply with this Order or any portion thereof, without sufficient cause, may also subject the Respondents to liability for punitive damages in an amount at least equal to, and not more than three times the amount of any costs incurred by the Fund as a result of the

Respondents' failure to take proper action, pursuant to section 107(c)(3) of CERCLA, 42 U.S.C. 9607(c)(3).

IT IS SO ORDERED:

BY: David A. Ullrich
David A. Ullrich, Director
Waste Management Division
U.S. Environmental Protection Agency
Region V

DATE OF ISSUANCE: 11/27/90

Attachment I

RECIPIENTS OF THIS ORDER

NL INDUSTRIES

BV & G TRANSPORT

TRUST 454

GLOBE UNION

AT&T

ESB

ACE SCRAP METAL PROCESSORS

SOUTHERN SCRAP I & M/METAL PROCESSING

PRESTOLITE BATTERY

GOPHER SMELTING & REFINING COMPANY

STRAIGHTWAY IRON & METAL COMPANY

PHILIPP BROTHERS, INC.

FEDERAL CARTRIDGE CORPORATION
d/b/a FEDERAL-HOFFMAN, INC.

FINER METAL COMPANY

SANDERS LEAD COMPANY

GOULD, INC.

FEDERAL IRON & METAL COMPANY

SUPPO SMELTING & REFINING COMPANY

U.S. STEEL LEAD REFINERY, INC.

ST. LOUIS LEAD RECYCLERS

MISSOURI IRON & METAL COMPANY, INC.

CHEMETCO

BECKER METALS CORPORATION

ED PARKINSON

ALTER COMPANY

A. MILLER & COMPANY

ACME BATTERY MANUFACTURING CO.

MADEWELL & MADEWELL

DELCO-REMY DIVISION OF GM

VINCE JACKS IRON & METAL

GENERAL BATTERY CORPORATION

SHOSTAK IRON & METAL CO., INC.

WADDELL BROTHERS METAL COMPANY

LISSNER CORPORATION

MORRIS TICK CO. INC.

MCKINLEY IRON COMPANY

CENTRAL IRON & METAL COMPANY

VERSATILE METALS

ABF METAL COMPANY

COMMERCIAL METALS COMPANY

DEL RICH BATTERY & METAL COMPANY

FEINBERG BROS.

SEIDENFELD & SON IRON & METAL

SOL TICK & COMPANY
d/b/a HERB TICK INC.

INTERSTATE BATTERY SYSTEMS OF AMERICA

SPRINGFIELD BATTERY COMPANY

FORD MOTOR COMPANY

CHANEN'S, INC.

SURE-START BATTERY

ATTACHMENT II

RECORD OF DECISION
March 30, 1990

AVAILABLE UPON REQUEST

SCOPE OF WORK FOR THE REMEDIAL DESIGN AND REMEDIAL ACTION
AT
NL INDUSTRIES/TARACORP SITE
Granite City, Illinois

I. PURPOSE

The purpose of this Remedial Action at the NL Industries/Taracorp NPL Site ("the NL Site" or "the Site") is to implement the Record of Decision (ROD) for this Site which was signed by the Regional Administrator on March 30, 1990. The U.S. EPA Superfund Remedial Design and Remedial Action Guidance, the Final Record of Decision, the approved Remedial Design/Remedial Action (RD/RA) Work Plan, any additional guidance provided by U.S. EPA, and this Scope of Work (SOW) shall be followed in designing and implementing this Remedial Action at the Site. In the event of any inconsistency between this SOW and the NL Industries/Taracorp Site Order, the Order shall govern. Terms used herein shall have the same meaning as used in the ROD, unless otherwise specified.

II. DESCRIPTION OF THE REMEDIAL ACTION TO BE CONDUCTED BY RESPONDENTS

Respondents (those parties listed in Attachment I of the Administrative Order) shall perform the remedy described in the ROD. The remedy shall be designed, implemented, and maintained to achieve the standards set forth below. The standards and specifications of the major components of the remedial action for the Site that shall be designed and implemented by the Respondents are:

Soil and Battery Case Material-Sampling/Inspection

Soil lead sampling shall be conducted in Area 1 (see Figure 9) and all Residential Areas, as that term is defined in the Order, and includes, but is not limited to, areas 2-8, Eagle Park Acres, and Venice (ROD Figures 5,6,7) and immediately adjacent properties to determine the depth to which each individual residential yard must be excavated to achieve a 500 ppm soil lead cleanup level and the depth to which Area 1 must be excavated to achieve a 1000 ppm cleanup level.

Inspections of alleys and driveways and areas containing surficial battery case materials in Eagle Park Acres, Venice, Granite City, Madison, and other nearby communities shall be conducted to determine which specific areas not already identified in Figures 5, 6 and 7 of the ROD need remediation. TCLP testing for lead shall be conducted for all areas identified through these inspections as well as all areas found in Figures 5, 6, and 7 of the ROD. Lead sampling of all identified areas which are not alleys or driveways shall be conducted to determine the depth to which such areas must be excavated to achieve a 500 ppm cleanup level. TCLP testing shall be conducted consistent with 40 CFR 261.24 and 40 CFR 261, Appendix II.

Taracorp Drums

All drums on the Taracorp Pile (refer to ROD Figure 2) shall be removed and transported to an off-site secondary lead smelter for lead recovery.

St. Louis Lead Recyclers Piles (SLLR Piles)

The SLLR Piles (see ROD Figure 2) shall be consolidated into the Taracorp Pile.

Alleys and Driveways in Venice and Eagle Park Acres

Based upon the FS and the inspections outlined above, battery case material shall be excavated from all alleys and driveways in Venice, Eagle Park Acres, and other nearby communities in which it has come to be located at or near the surface. Sampling using the TCLP method for lead shall be conducted in all affected areas prior to removal of the case material. All excavated material which passes the TCLP test for lead shall be transported to the Taracorp pile for consolidation. All excavated material which does not pass the TCLP for lead shall be treated to meet land disposal restrictions and transported to an off-site RCRA-compliant landfill or placed in the Taracorp Pile. Excavated areas shall be backfilled, if necessary, and paved.

Area 1

Based on the sampling outlined in the Soil and Battery Case Material Sampling/Inspection paragraph above, all unpaved portions of Area 1, including the material which is beneath the SLLR Piles, with lead concentrations greater than 1000 ppm shall be excavated and consolidated with the Taracorp Pile. The surfaces shall be restored with asphalt or sod, in accordance with present usage.

Residential Areas

Based on the sampling outlined in the Soil and Battery Case Material Sampling/Inspection paragraph above, an accurate mapping of all residential areas around the Site and in Eagle Park Acres, Venice, and other nearby communities with a lead concentration greater than 500 ppm shall be provided. All soils and battery case materials with lead concentrations greater than 500 ppm in each subunit of the Residential Areas, as approved by U.S. EPA, and as indicated on the map shall be excavated and consolidated with the Taracorp pile, with the exception of soils and battery case materials in Eagle Park Acres, Venice, and other nearby communities which do not pass the TCLP test for lead, which shall be transported to an off-site RCRA-compliant landfill or treated prior to placement in the Taracorp pile so that such materials pass the TCLP test. The surfaces shall be restored in accordance with present usage. Every effort shall be made to remediate sensitive areas (school yards, playgrounds, areas with highest lead concentrations, etc.) first, unless an alternate plan is approved by U.S. EPA after Remedial Design. No trees or

structures or large vegetation shall be removed.

Home Interior Inspection

During the excavation of each residential yard, an inspection of the interior of each home shall be conducted to identify possible sources of lead exposure. The results and recommendations of each inspection shall be provided to the appropriate residents.

Dust Control Measures

During all excavation, transportation, and consolidation activities conducted as part of the remedy, dust control measures shall be implemented as necessary to prevent the generation of visible emissions during these activities.

RCRA-Compliant Multimedia Cap

After all materials have been transported to and consolidated with the Taracorp Pile, the consolidated pile shall be graded and capped with a RCRA-compliant, multimedia cap. Refer to ROD Figure 8 for the cap configuration. The cap shall meet or exceed the requirements of RCRA Subtitle C, and Illinois State law.

Bottom Liner

With the exception of the existing Taracorp Pile, a clay bottom liner shall be constructed on all areas upon which consolidated materials are to be placed as part of this remedy. Portions of this liner on Area 1 shall be constructed after Area 1 has been excavated to a 1000 ppm lead cleanup level.

Institutional Controls/Fencing

A fence shall be constructed in a manner sufficient to prevent access to the Expanded Taracorp Pile. Warning signs shall be posted at 200-foot intervals along the fence advising that the area is hazardous due to waste materials and soils beneath the cap which may pose a risk to public health.

Groundwater Monitoring

A minimum of one deep well upgradient from the Expanded Taracorp Pile and three deep wells downgradient from the Expanded Taracorp Pile shall be installed to monitor water quality in the lower portion of the upper aquifer. Monitoring of these wells and the 14 existing site wells shall be conducted semi-annually for a minimum of 30 years and analyses shall be performed for the full scan Hazardous Substance List, which is attached as Table 1. After four sampling events, consideration shall be given to deleting parameters from the list which are below detection limits for all four events.

Air Monitoring

Air monitoring for lead and PM_{10} (particulate matter less than 10 microns) shall be performed annually at a minimum of two locations adjacent to the site for a minimum of 30 years.

Cap Monitoring

For a minimum of 30 years, semi-annual inspections of the cap shall be conducted to identify areas requiring repair. Appropriate maintenance shall be conducted immediately following the inspections.

Contingency Plans

Contingency Plans for groundwater and the cap/soil cover shall be developed to provide remedial action in the event that concentrations of contaminants in groundwater exceed applicable standards or established action levels (as further detailed in Section E. of the RD Work Plan below) or that contaminated soils or waste materials have migrated to the surface or become releasable to the air in the future. Contingency Plans shall be fully implemented in the event that for two consecutive monitoring events, concentrations of contaminants in groundwater exceed applicable standards or established action levels (as further detailed in Section E. of Task I below), or statistically exceed background levels, whichever is higher.

Other Contingency Measures

Contingency measures shall be developed and implemented to provide for sampling and removal of any soils within the zone of contamination described by the soil lead sampling to be implemented above with lead concentrations above 500 ppm which are presently capped by asphalt or other barriers but become exposed in the future, for a period not to exceed 30 years, due to land use changes or deterioration of the existing use.

III. SCOPE OF REMEDIAL DESIGN AND REMEDIAL ACTION

The Respondents shall prepare and submit to U.S. EPA for approval the RD and RA Work Plans, as described in the Order and this Scope of Work, which shall set forth the steps Respondent shall take to design, construct, operate and maintain the remedy. The Respondents are responsible for the timely submittal and, upon approval by U.S. EPA, implementation of the RD and RA Work Plans and the plans contained therein.

All remedial construction, excluding activities such as operation and maintenance and implementation of contingency plans, described in the RD and RA Work Plans shall be completed within three and one half (3.5) years from the date of the RA Work Plan approval.

The schedule for submittal and review of the RD and RA Work Plans is delineated in Section IX of the Order. The RD and RA Work Plans shall

include, at a minimum, all remedy components described in the ROD Section IX and Section II above.

RD Work Plan

A. Statement of Work to be Performed
B. Quality Assurance Project Plan and Sampling and Analysis Plan
C. Home Inspection and Fugitive Dust Control Plan
D. A Plan for Satisfaction of Permitting and Access Requirements
E. Groundwater, and Soil Cover/Cap Contingency Plans
F. A Plan for Other Contingency Measures

RA Work Plan

A. Design Plans and Specifications
B. Cost Estimate
C. Project Schedule
D. Construction Quality Assurance Plan
E. Health and Safety Plan/Emergency Contingency Plan

RD WORK PLAN

The Respondents shall prepare and implement a RD Work Plan which shall include, at a minimum, the specific plans listed below. The RD Work Plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation of the Remedial Design and the Remedial Action to be taken by the Respondents. The RD Work Plan shall also include a description of qualifications of key personnel directing the RD/RA, including contractor personnel. All soil and battery case material lead sampling and analysis shall be completed within 120 days of U.S. EPA approval of the RD Work Plan.

A. Statement of Work To Be Performed

The Respondents shall develop and submit to U.S. EPA for approval a concise Statement of Work to be performed which is consistent with the Record of Decision and Section II of this SOW.

B. Quality Assurance Project Plan (QAPP) and Sampling and Analysis Plan (SAP)

The Respondents shall develop and submit to U.S. EPA for approval a QAPP and a SAP which shall be prepared in accordance with U.S. EPA's "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," (QAM-005/80) and subsequent amendments to such guidelines and shall outline, for all sampling except blood lead sampling which shall be conducted as part of this remedial action, numbers and locations of all samples to be taken, sampling, shipping, and analytical methods and procedures to be implemented, and quality assurance procedures to be used. The SAP shall also outline the criteria to be used to make the determination

of which residential subunits shall be included in the map of areas with a soil lead concentration greater than 500 ppm, and the criteria used to determined to what depth each of the identified subunits shall be excavated.

C. Home Inspection and Fugitive Dust Control Plan

The Respondents shall develop and submit to U.S. EPA for approval a Home Inspection and Fugitive Dust Control Plan which shall outline, at a minimum, qualifications of personnel involved, methods to be employed to control visible emissions of fugitive dust, corrective measures to be implemented in the event that visible emissions are observed, the approach to be taken for inspection of the interiors of homes, and to determine all possible sources of lead exposure in the homes, sampling, if any, and analytical procedures to be employed, how recommendations shall be developed and provided to the residents, and actions, if any, to be taken based on the recommendations.

D. A Plan for Satisfaction of Permitting and Access Requirements

The Respondents shall develop and submit to U.S. EPA for approval a plan which shall outline and include, at a minimum, a comprehensive list of all permits required in conjunction with the remedial action, procedures and estimated time frames for acquiring required permits, procedures and methods to be implemented to ensure compliance with permitting requirements, a list of all properties to which access will be required in conjunction with the remedial action, sample access agreements for inspection soil sampling and excavation activities, procedures and estimated time frames for acquiring required access, and procedures and methods to be implemented to obtain access and to follow up when access is not obtained.

E. Groundwater and Soil Cover/Cap Contingency Plans

The Respondents shall develop and submit to U.S. EPA for approval a plan which shall outline and include, at a minimum, a list of all statistical methods and action levels to be used to determine when the groundwater contingency plan shall go into effect. Action levels shall include, whenever possible, MCLGs, MCLs, Illinois General Use Water Quality Standards and any other appropriate regulatory or statutory standard. Respondent shall also develop a statement of the specific elements which shall comprise inspections to be performed on the soil cover/cap to ensure its integrity, and with specificity, the remedial actions to be employed in the event that concentrations of contaminants in groundwater exceed established action levels or contaminated soils or waste materials have migrated to the surface or have become releasable to the air in the future.

F. Other Contingency Measures

The Respondents shall develop and submit to U.S. EPA for approval a plan to design and implement contingency measures to provide for sampling and removal of any soils within the zone of contamination described by the soil lead sampling to be implemented above with lead concentrations above 500 ppm which are presently capped by asphalt or other barriers but become exposed in the future due to land use changes or deterioration of the existing use.

RA WORK PLAN

The Respondents shall develop and submit to U.S. EPA for approval a RA Work Plan which shall include, at a minimum, the specific plans listed below to fully implement the Remedial Action at the facility as defined Section II of this SOW.

A. Design Plans and Specifications

The Respondents shall develop and submit to U.S. EPA for approval clear and comprehensive design plans and specifications which include but are not limited to the following:

1. Discussion of the design strategy and the design basis, including;

   a. Compliance with all applicable or relevant and appropriate environmental and public health standards; and

   b. Minimization of environmental and public impacts.

2. The constructability of the design;

3. Description of assumptions made and a detailed justification of these assumptions;

4. Discussion of the possible sources of error and references to possible operation and maintenance problems;

5. Detailed drawings of the proposed design;

6. Tables listing equipment and specifications;

7. Appendices including:

   a. Sample calculations (one example presented and explained clearly for significant or unique design calculations);

   b. Derivation of equations essential to understanding the report; and

   c. Results of laboratory or field tests.

B. Cost Estimate

The Respondents shall develop and submit to U.S. EPA for approval cost estimates for the purpose of assuring that the Respondents have the financial resources necessary to construct and implement the Remedial Action. The cost estimates shall include a detailed breakdown of the cost of implementing each portion of the Remedial Action and each

portion of the residential areas requiring the excavation of soil. The cost estimate shall include both capital and operation and maintenance costs. Approval of the cost estimate by U.S. EPA shall not be construed as a limitation on Respondents' obligation to finance and perform work required under the Orders and Scope of Work in any case where the actual cost exceeds the estimate.

C. Project Schedule

The Respondents shall develop and submit to U.S. EPA for approval a Project Schedule for construction and implementation of the Remedial Action which identifies timing for initiation and completion of the Remedial Action. Respondents shall specifically identify dates for completion of the project and major interim milestones. The interim milestones shall include, at a minimum, a completion date for each of the major tasks in the remedial action. Interim milestones shall also include a schedule for the completion of 20%, 40%, 60%, 80%, and 100% of the residential soil cleanup required by this SOW, the Order, and the ROD. The scheduled date for the completion of each interim milestone is an enforceable part of the Order. The project schedule shall provide for completion of remedial construction by no later than 3 1/2 years from the approval of the RA Work Plan by U.S. EPA.

D. Construction Quality Assurance Plan

The Respondents shall develop and submit to U.S. EPA for approval a construction quality assurance (CQA) plan which shall contain the following elements:

1. Responsibility and Authority

The Respondents shall describe fully in the CQA plan the responsibility and authority of all organizations (i.e. technical consultants, construction firms, etc.) and key personnel involved in the construction of the Remedial Action. The Respondents shall also identify a CQA officer and the necessary supporting inspection staff.

2. Construction Quality Assurance Personnel Qualifications

The Respondents shall set forth the qualifications of the CQA officer and supporting inspection personnel to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

3. Inspection Activities

The Respondents shall summarize in the CQA Plan the observations and tests that will be used to monitor the construction and/or installation of the components of the Remedial Action. The plan shall include the scope and frequency of each type of inspection. Inspections shall verify compliance with the environmental requirements and include, but not be limited to, air quality and

emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspections shall also ensure compliance with all health and safety procedures. In addition to oversight inspections, the Respondents shall conduct the following activities:

a. Preconstruction inspection and meeting with U.S. EPA

The Respondents shall conduct a preconstruction inspection and meeting to:

i. Review methods for documenting and reporting inspection data;

ii. Review methods for distributing and storing documents and reports;

iii. Review work area security and safety protocol;

iv. Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and

v. Conduct a site walk-around to verify that criteria, plans, and specifications are i outline the general approach to be emplo the plans and specifications and remedial ac to review material and equipment storage locations.

The Respondents shall designate a person to take minutes at the preconstruction inspection and meeting; and minutes shall be transmitted to all parties.

b. Prefinal inspection

Upon preliminary project completion, Respondents shall notify EPA for the purposes of conducting a prefinal inspection. The prefinal inspection shall consist of a walk-through inspection of the entire project site to determine whether the project is complete and consistent with the contract documents and the EPA approved Remedial Action. Any outstanding construction items discovered during the inspection shall be identified and noted. Additionally, treatment equipment shall be operationally tested by the Respondents. The Respondents shall certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. The Respondents shall specify in the prefinal inspection report any outstanding construction items, actions required to resolve these items, completion date for these items, and the date for final inspection.

c. Final inspection

Upon completion of any outstanding construction items, the Respondents shall notify EPA for the purposes of conducting a final inspection. The final inspection shall consist of a walk-through inspection of the project site. The prefinal inspection report shall be used as a checklist with the final inspection focusing on the outstanding construction items identified in the prefinal inspection. Confirmation shall be made that outstanding items have been resolved.

4. Sampling Requirements

The Respondents shall present in the CQA the sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems as addressed in the RD/RA Documents.

5. Documentation

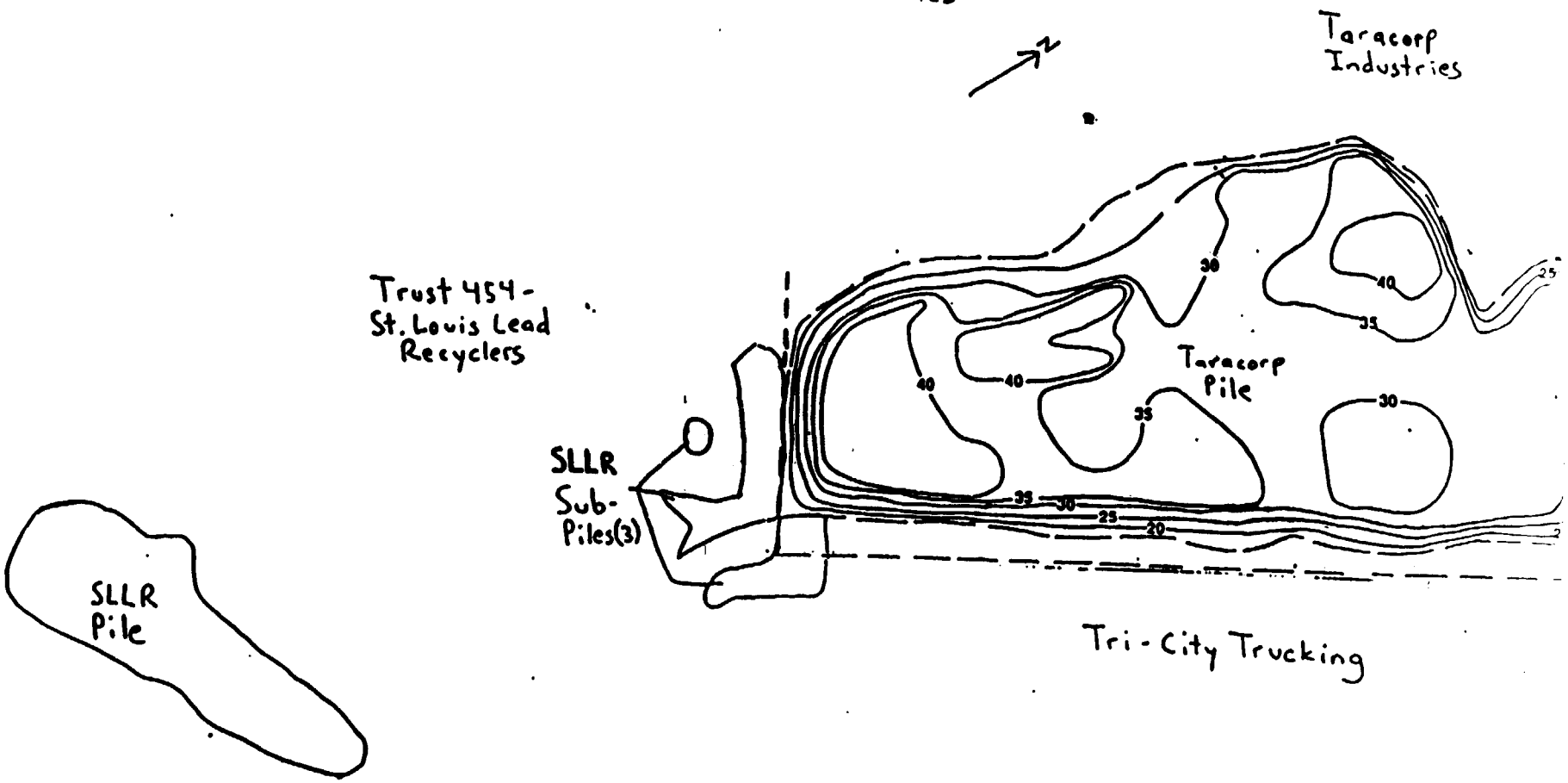
The Respondents shall describe in detail in the CQA plan the reporting requirements for CQA activities. This shall include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports, and final documentation. Provisions for the final storage of all records shall be presented in the CQA plan.

E. Health and Safety Plan/Emergency Contingency Plan

The Respondents shall develop and submit to U.S. EPA a Health and Safety Plan which describes safety procedures for all phases of the Remedial Action. The Respondents shall develop and submit to U.S. EPA an Emergency Contingency Plan which shall be implemented in the event of a life-threatening situation or a release of hazardous substances to the environment.

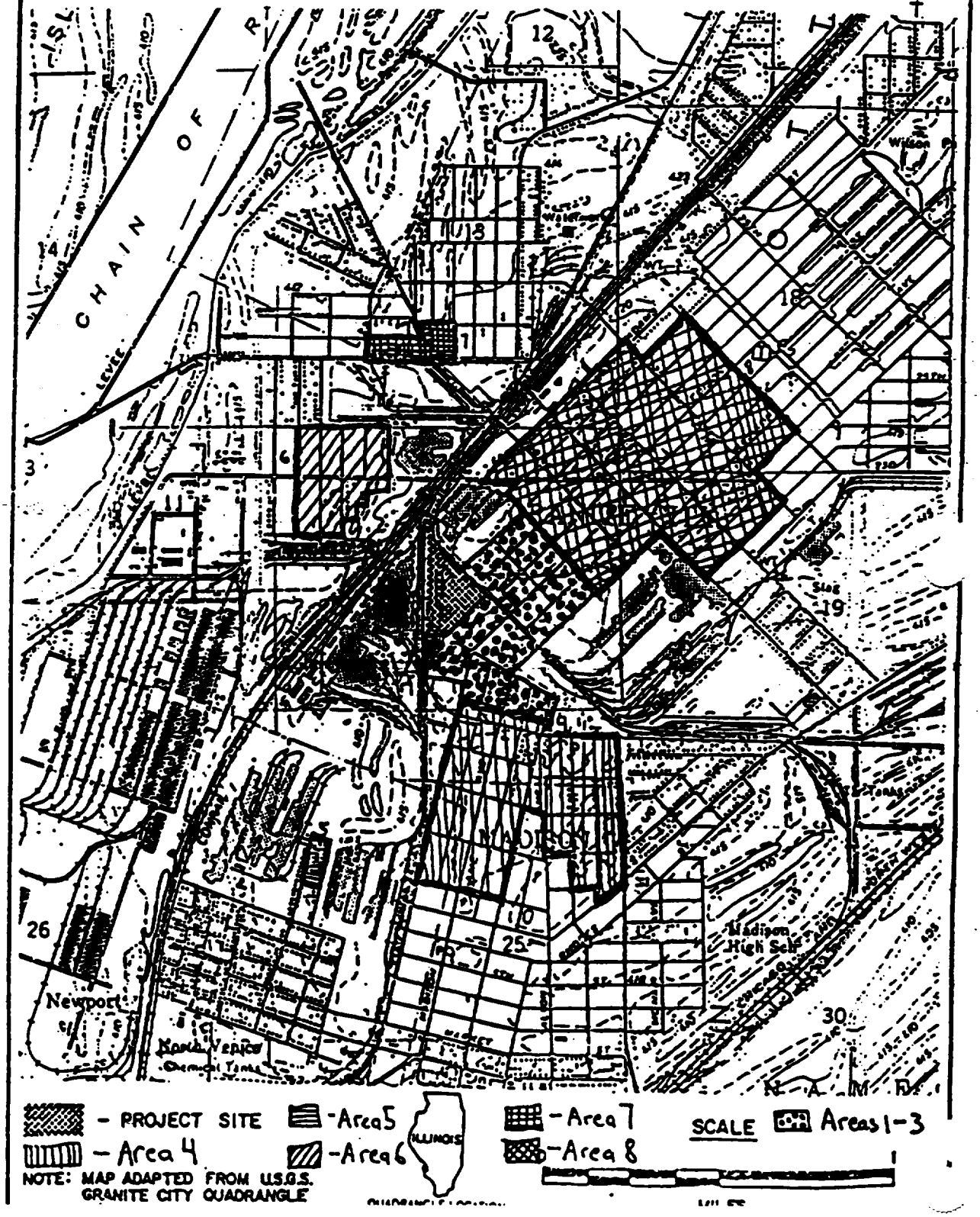
ROD : Figure 2

Site Plan - Waste Piles

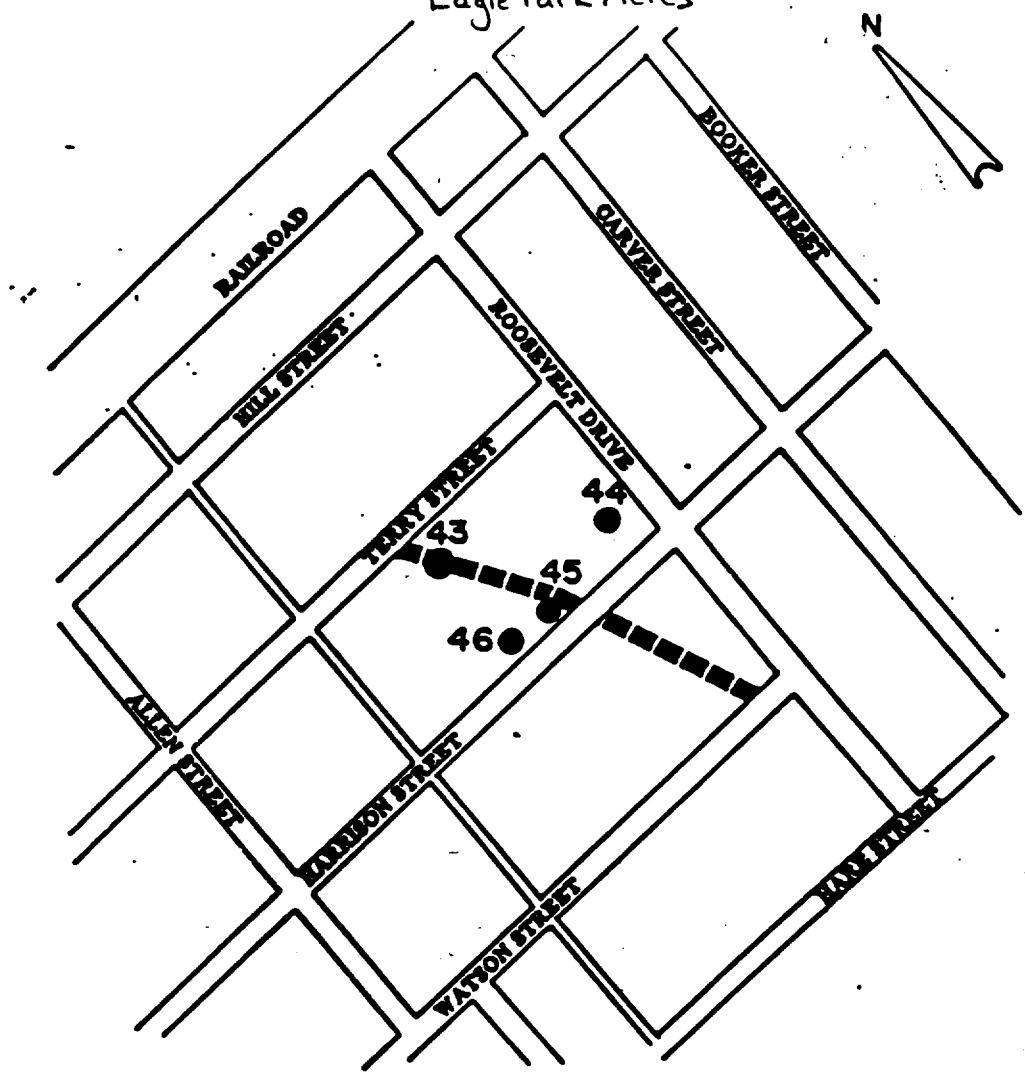


ROD Figure 5

NL INDUSTRIES
GRANITE CITY SITE
GRANITE CITY, ILLINOIS
Estimated Areas of Lead Contamination
Above 500 ppm



ROD Figure 6
Estimated Areas of Contamination
Eagle Park Acres



REMOTE FILL AREA

EAGLE PARK ACRES

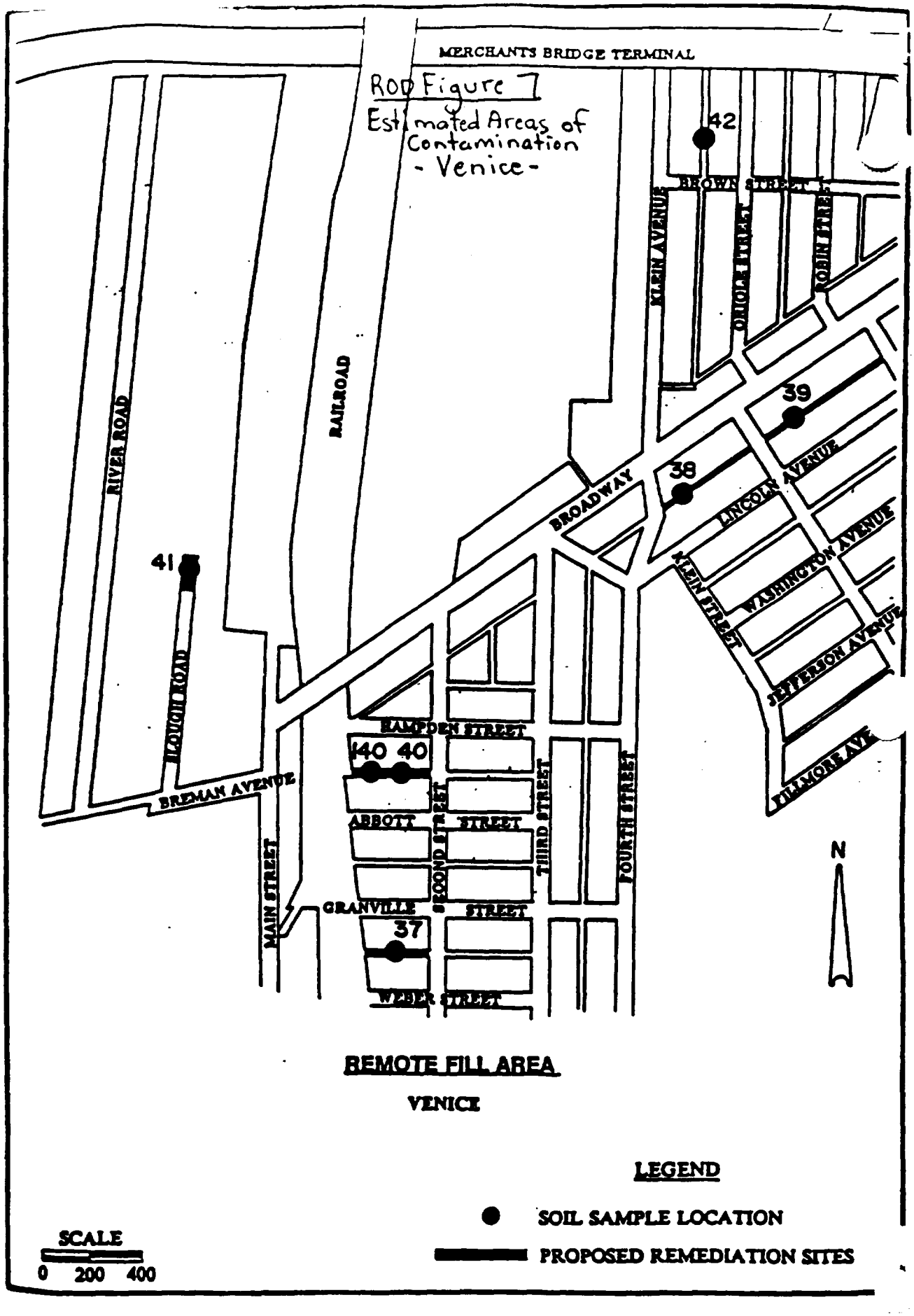
LEGEND

● SOIL SAMPLE LOCATION

■■■ APPROXIMATE LOCATION OF DITCH

SCALE

0 200 400


ROD Figure 7
Estimated Areas of Contamination
- Venice -
MERCHANTS BRIDGE TERMINAL
RIVER ROAD
RAILROAD
KLEIN AVENUE
BROWN STREET
ORIOLE STREET
ROBIN STREET
42
39
38
41
BROADWAY
LINCOLN AVENUE
WASHINGTON AVENUE
KLEIN STREET
JEFFERSON AVENUE
FILLMORE AVE
HAMPDEN STREET
40
BREMAN AVENUE
ABBOTT STREET
SECOND STREET
THIRD STREET
FOURTH STREET
MAIN STREET
GRANVILLE STREET
37
WEBER STREET
N
REMOTE FILL AREA
VENICE
LEGEND
SOIL SAMPLE LOCATION
PROPOSED REMEDIATION SITES
SCALE
0 200 400

ROD Figure 8

Multimedia Cap Detail

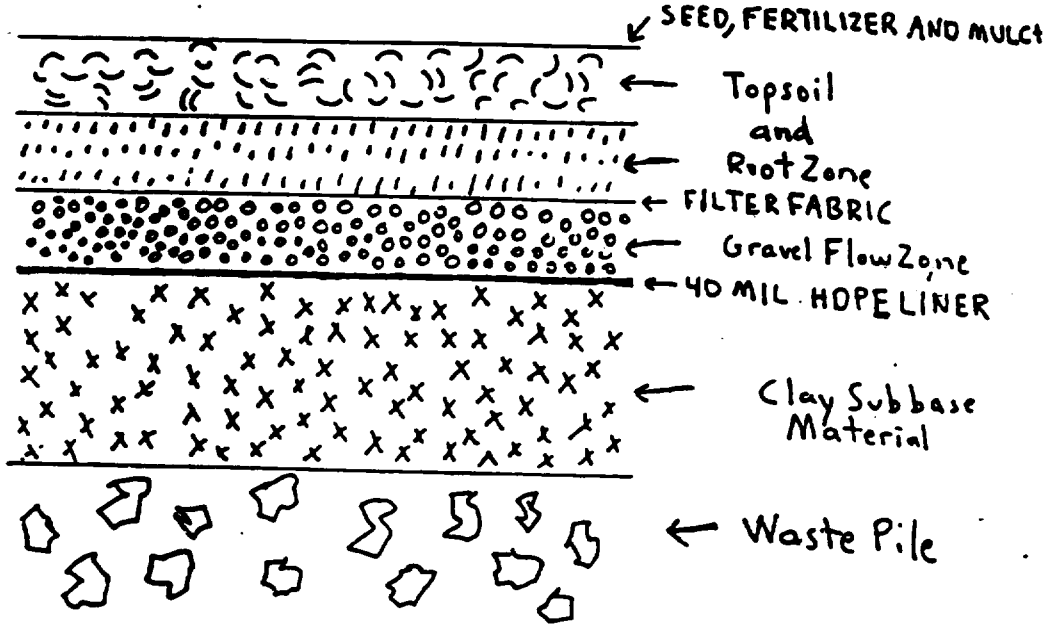


Figure 9
Area 1 (Shaded)

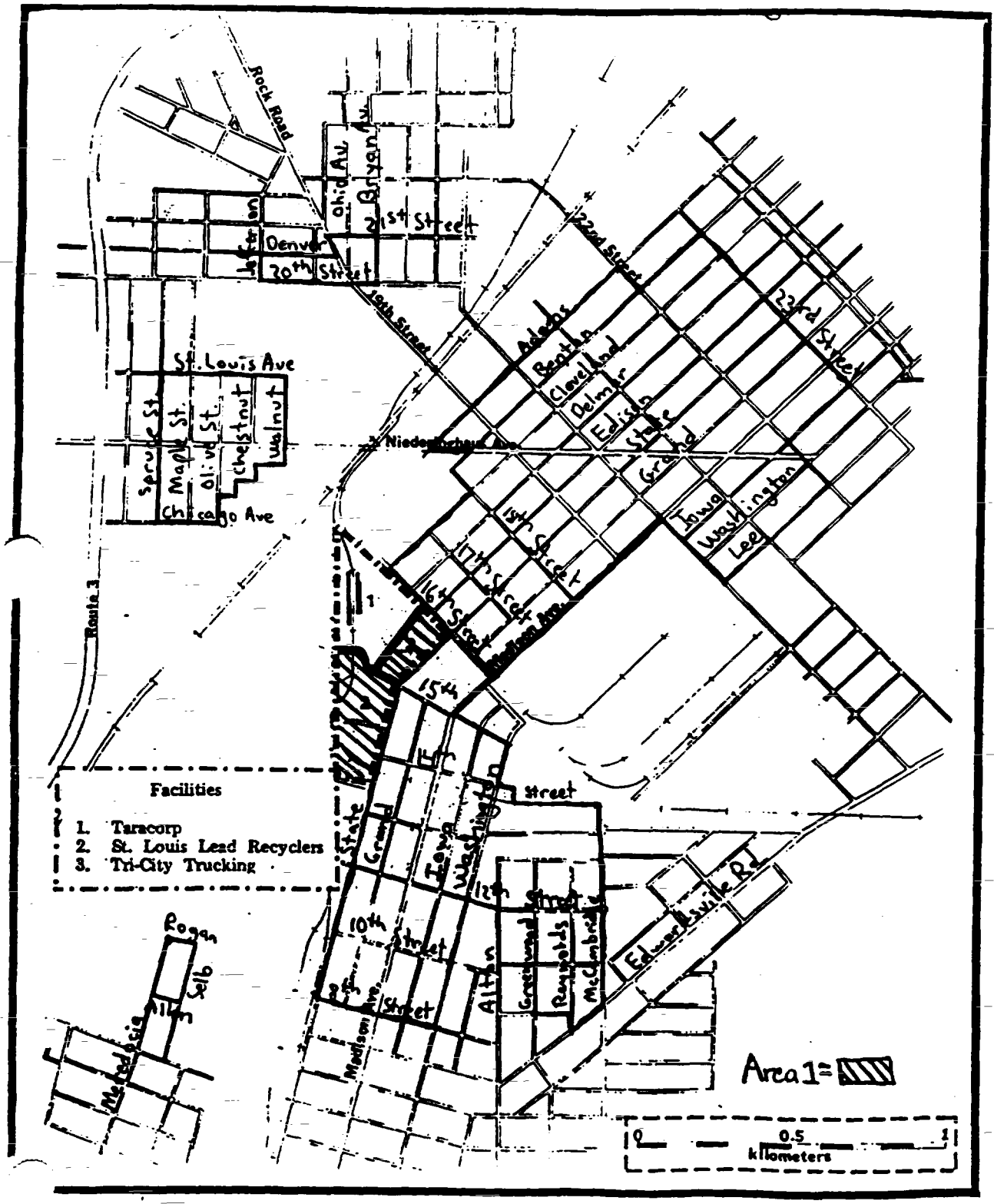


TABLE 1 – continued

Semi-Volatiles	Pesticides	Element – Metals
69. Acenaphthene	101. alpha-BHC	Aluminum
70. 2,4-Dinitrophenol	102. beta-BHC	Antimony
71. 4-Nitrophenol	103. delta-BHC	Arsenic
72. Dibenzofuran	104. gamma-BHC (Lindane)	Barium
73. 2,4-Dinitrotoluene	105. Heptachlor	Beryllium
74. 2,6-Dinitrotoluene	106. Aldrin	Cadmium
75. Diethylphthalate	107. Heptachlor Epoxide	Calcium
76. 4-Chlorophenyl Phenyl ether	108. Endosulfan I	Chromium
77. Fluorene	109. Dieldrin	Cobalt
78. 4-Nitroaniline	110. 4,4'-DDE	Copper
79. 4,6-Dinitro-2-methylphenol	111. Endrin	Iron
80. N-nitrosodiphenylamine	112. Endosulfan II	Lead
81. 4-Bromophenyl Phenyl ether	113. 4,4'-DDD	Magnesium
82. Hexachlorobenzene	114. Endosulfan Sulfate	Manganese
83. Pentachlorophenol	115. 4,4'-DDT	Mercury
84. Phenanthrene	116. Endrin Ketone	Nickel
85. Anthracene	117. Methoxychlor	Potassium
86. Di-n-butylphthalate	118. Chlordane	Selenium
87. Fluoranthene	119. Toxaphene	Silver
88. Pyrene	120. AROCLOR-1016	Sodium
89. Butyl Benzyl Phthalate	121. AROCLOR-1221	Thallium
90. 3,3'-Dichlorobenzidine	122. AROCLOR-1232	Vanadium
91. Benzo(a)anthracene	123. AROCLOR-1242	Zinc
92. bis(2-ethylhexyl)phthalate	124. AROCLOR-1248	
93. Chrysene	125. AROCLOR-1254	Cyanide
94. Di-n-octyl Phthalate	126. AROCLOR-1260	
95. Benzo(b)fluoranthene		
96. Benzo(k)fluoranthene		
97. Benzo(a)pyrene		
98. Indeno(1,2,3-cd)pyrene		
99. Dibenz(a,h)anthracene		
100. Benzo(g,h,i)perylene		

Appendix A

ADMINISTRATIVE RECORD INDEX

NL INDUSTRIES/TARACORP
GRANITE CITY, ILLINOIS SITE

	DATE	TITLE / DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
1.	3/11/85	RI/FS Consent Order	N/A	Same as Title	48
2.	Various	Access File	N/A	RI Access Agreements and Summaries	78
3.	Various	Access File	N/A	RI-Phase II Access Agreements	8
4.	May 1986	"RI/FS Work Plan"	O'Brien & Gere	RI/Fs Work Plan/ QAPP/Safety Plan	170
5.	5/6/87	Memo to Jerri Gerl, U.S. EPA	Brad Bradley, U.S. EPA	Request for review of well locations	6
6.	5/20/87	RI Preliminary Results	O'Brien & Gere	Same as Title	25
7.	5/26/87	Letter to Brad Bradley	Ken Miller, IEPA	IEPA Comments on RI/FS Work Plan Addendum	4
8.	6/16/87	Letter to Stephen Holt, NL Industries	Brad Bradley	U.S. EPA request for and comments on Work Plan Addendum	3
9.	7/10/87	Revised Work Plan Addendum	Stephen Holt, NL Industries	Same as Title	8
10.	September 1988	"RI Report"	O'Brien & Gere	Same as Title	405
11.	1/10/89	RI Report Addendum	Brad Bradley	Letter approving and stating necessary changes to RI Report	5
12.	2/8/89	Meeting Notes	Brad Bradley/ O'Brien & Gere	NL Presentation of Remedial Response Objectives at meeting	7
13.	April 1989	"Alternatives Development Report"	O'Brien & Gere	Alternatives Array for the site	84

	DATE	TITLE / DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
14.	7/15/85	Letter to W.K. Weddendorf, NL Industries	John Hooker, IEPA	Comments on RI/FS Work Plan, Safety Plan	2
15.	7/24/85	Letter to W.K. Weddendorf, NL Industries	John Hooker, IEPA	Comments on QAPP	2
16.	7/30/85	Letter to W.K. Weddendorf, NL Industries	Neil Meldgin, U.S. EPA	Comments on RI/FS Work Plan	1
17.	8/19/85	Letter to W.K. Weddendorf, NL Industries	Neil Meldgin, U.S. EPA	Comments on QAPP	6
18.	8/23/85	Letter to Frank Hale, OB & G	W.K. Weddendorf	Transmittal letter of U.S. EPA and IEPA RI/FS Work Plan and QAPP Comments	13
19.	10/21/85	Letter to U.S. EPA and IEPA	W.K. Weddendorf	Response to U.S. EPA and IEPA RI/FS Work Plan and QAPP comments	21
20.	10/24/85	Letter to Frank Hale	W.K. Weddendorf	RI Soil Sampling Program Discussion	4
21.	11/25/85	Letter to W.K. Weddendorf	John Hooker	RI/FS Work Plan, QAPP Safety Plan Comments.	2
22.	12/11/85	Letter to W.K. Weddendorf	Brad Bradley	RI/FS Work Plan Safety Plan Comments	2
23.	12/17/85	Letter to W.K. Weddendorf	Brad Bradley	RI/FS Work Plan Safety Plan Comments	4
24.	12/20/85	Letter to Brad Bradley	John Hooker	RI Sampling Parameters	2
25.	1/14/86	Letter to U.S. EPA and IEPA	W.K. Weddendorf	RI/FS Work Plan Comment Timeframes	2
26.	2/4/85	Letter to U.S. EPA and IEPA	W.K. Weddendorf	Response to U.S. EPA and IEPA comments on RI/FS Work Plan	23
27.	5/6/86	Memo to file	Brad Bradley	Summary of 2/27/86 meeting between U.S. EPA/IEPA/NL Industries	3

	DATE	TITLE / DOCUMENT TYPE	AUTHOR	CONTENTS	
28.	3/4/86	Letter to Brad Bradley	Ken Miller, IEPA	Revised RI/FS Work Plan Comments	2
29.	3/24/86	Letter to Frank Hale	W.K. Weddendorf	Summary of changes necessitated by 2/27/86 meeting	2
30.	5/12/86	Memo to file	Brad Bradley	Summary of U.S. EPA/ IEPA/NL Industries 4/9/86 QAPP Conference Call	19
31.	4/15/86	Letter to W.K. Weddendorf	Brad Bradley	Approval to commence RI Tasks 1 and 2	1
32.	6/26/86	Letter to Stephen Holt, NL Industries	Ken Miller	Comment on May 1986 RI/FS Work Plan	4
33.	7/30/86	Letter to Stephen Holt	Brad Bradley	Approval of May 1986 RI/FS Work Plan	11
34.	8/29/86	Letter to David Hill, O'Brien & Gere	David Payne, U.S. EPA	Requirements for QA Performance Evaluation Samples	1
35.	11/4/86	Letter to U.S. EPA and IEPA	Stephen Holt	RI Field Work Time Frames	2
36.	12/15/86	Letter responding to Holt's 11/4/86 letter	Brad Bradley	Same as Title	1
37.	4/9/87	Letter to Stephen Holt	Brad Bradley	Parameters to be analyzed for in groundwater in 2nd Quarter for RI	2
38.	4/24/87	Letter to Stephen Holt	Ken Miller	Data Reporting Requirements for RI Samples	2
39.	10/30/87	Letter to Stephen Holt	Brad Bradley	Approval for RI/FS Work Plan Addendum	1
40.	12/30/86	Memo to Norman Niedergang, U.S. EPA	David Payne, U.S. EPA	Performance Evaluation Sample Analysis	4
41.	3/11/88	Letter to Stephen Holt	Brad Bradley	Comments on Draft RI Report	43

	DATE	TITLE / DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
42.	5/20/88	Letter to Stephen Nolt	Brad Bradley	Timeframes for additional RI Soil Analyses	3
43.	5/27/88	Letter to Stephen Nolt	Frank Nale	Analysis of Additional Soil Samples	2
44.	6/6/88	Letter to U.S. EPA and IEPA	Stephen Nolt	Soil Analysis and Final RI Report Time Frames	2
45.	8/18/88	Letter to U.S. EPA and IEPA	Frank Nale	Draft RI Report Risk Assessment Defense	5
46.	8/18/88	Letter to U.S. EPA and IEPA	Frank Nale	RI QA Data Review Comments	3
47.	8/24/88	Letter to Stephen Nolt	Brad Bradley	Final RI Report Submission Schedule Approval	1
48.	9/7/88	Letter to Frank Nale	Brad Bradley	Risk Assessment Criticism Letter	3
49.	11/4/88	Letter to Stephen Nolt	Brad Bradley	Necessary Changes to Final RI Report	3
50.	11/30/88	Letter to U.S. EPA IEPA	Stephen Nolt	Time Frame for NL Industries Response to 11/4/88 Bradley letter	2
51.	12/14/88	Letter to Brad Bradley	Bonni Kaufman Donovan, Leisure, Newton & Irvine	Time Frames for NL Industries Response to 11/4/88 Bradley letter	1
52.	12/16/88	Letter to U.S. EPA and IEPA	Bonni Kaufman Donovan, Leisure Newton & Irvine	NL Industries Response to 11/4/88 Bradley letter	23
53.	12/16/88	Letter to Brad Bradley	Ken Miller	IEPA Comments on U.S. EPA Procedures for Finalizing RI Report	2
54.	2/1/89	Letter to Stephen Nolt	Brad Bradley	Final Agency Action on Final RI Report	6
55.	6/23/89	Letter to Stephen Nolt	Brad Bradley	Comments on Alternatives Array Document	4

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56.	10/26/89	Letter to Stephen Holt	Frank Hale	Areas Targeted for Remediation	3
57.	Various	Bi-Monthly Progress Reports	Stephen Holt	Same at Title	66
58.	5/28/85	Letter to U.S. EPA and IEPA	W.K. Weddendorf	Statement of NL Industries Project Coordinator	2
59.	4/13/89	"Cincinnati Soil Lead Demonstration Project"	University of Cincinnati	Same as Title	174
60.	April 1983	"Study of Lead Pollution in Granite City, Madison and Venice, Illinois"	IEPA	Same as Title	52
61.	September 1984	"A Land Pollution Assessment of Granite City/Taracorp Industries"	IEPA	Same as Title	64
62.	7/16/86	Letter to Frank Hale	Robert Crawford, Galena Industries	Lead Recovery Method	6
63.	2/10/87	Letter to Steve Holt	Ken Miller	Monitoring Well Boring Logs	25
64.	2/24/87	Letter to Sue Doubet, IEPA	John Coniglio, Envirodyne Engineers	RI groundwater Duplicate Sample Date	12
65.	6/12/86	Marble Lead Works Preliminary Assessment	Richard Lange, IEPA	Same as Title	18
66.	4/26/88	Letter to Stephen Holt	Ken Miller	Transmittal of Illinois Dept. of Public Health Soil Sampling Results and Lead health effects papers	160
67.	4/25/88	Letter to Brad Bradley	Ken Miller	Transmittal of Illinois Water Survey Data on Wells near the site	12

	DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
68.	1/18/89	"Preliminary Health Assessment for NL Industries/Taracorp Lead Site"	Agency for Toxic Substances and Disease Registry	Same as Title	6
69.	9/7/89	"Interim Guidance on Establishing soil Lead Cleanup levels at Superfund Sites"	Henry Longest U.S. EPA	Same as Title	3
70.	October 1989	"International Lead Zinc Research Organization Environmental Report"	Sames as Title	Same as Title	3
71.	5/13/85	Letter to Stanton Sobel, Taracorp, Inc.	W.K. Weddendorf	File Request	2
72.	3/5/87	Letter to Stephen Holt	Basil Constantelos, U.S. EPA	SARA Summary Letter	2
73.	8/24/88	Letter to Stephen Holt	Brad Bradley	RI/FS Guidance Transmittal letter	1
74.	8/30/89	Letter to Stephen Holt	Ken Miller	Well Survey Transmittal Letter	1
75.	Various	QA Data Review File	Various	Same as Title	43
76.	April 1988	"Title 35: Environmental Protection Subtitle C: Water Pollution"	IEPA	Illinois Regulations	106
77.	3/27/84	HRS Scoring Package	U.S. EPA	Same as Title	22
78.	Various	Community Relations File	Various	Community Relations Plan, Fact Sheet, etc.	59
79.	Various	RCRA File	Various	Part A Permit, SLLR Closure Plan, etc.	82

	DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
80.	5/28/85	Terracorp Access Agreement	W.K. Weddendorf	Same as Title	2
81.	10/24/89	Letter to Brad Bradley	Bonni Kaufman	Schedule for Response Under RI/FS order	2
82.	10/3/89	Letter to Stephen Holt	Brad Bradley	U.S. EPA and IEPA comments on draft Preliminary FS Report	13
83.	none	Pamphlet on Galena Industries	Galena, Ind	Lead Recycling System	3
84.	2/1/84	"Lead Exposure and the Health Effects on Children"	Minnesota Department of Health	Same as Title	99
85.	July 1988	"The Nature and extent of Lead Poisoning in Children in the United States"	ATSDR	Same as Title	561
86.	Various	Notice Letter/PRP File	Various	Notice Letters and PRP Information	123
87.	5/1/86	Trip Report	Brad Bradley	Summary of findings during a site visit	2+photos
88.	7/26/89	Door-to-Door private well survey	Dave Webb, Illinois Dept. of Health and Ken Miller	Survey forms of wells in area of site	64
89.	None	Packet	Various	Packet of Residential Area clean-up issues at several Superfund Sites	11

DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
90. Various	Other RODs File	Various	Copies of other RODs and ROD abstracts involving soil Lead cleanup	138
91. 1/16/90	Letter to Valdas Adamkus, EPA	Steven Tasher, Wilkie Farr & Gallagher	Letter regarding Dispute Resolution	2
92. 1/3/90	"Evaluation of Studies on Human Exposure to Soil Lead Residues"	O'Brien & Gere	Same as Title	9
93. 2/8/90	Public Meeting Handout	NL Industries	Handout presented at 2/8/90 Public Meeting in Granite City, IL	10
94. 10/26/89	Letter to Stephen Holt	Ken Miller	Articles on Lead Uptake	16
95. 11/10/89	Letter to U.S. EPA and IEPA	Stephen Holt	NL Industries Response to 10/3/89 draft Preliminary FS Comment Letter	9
96. 2/8/90	Public Meeting Transcript	Jo Elaine Foster & Associates	Same as Title	91
97. 1/3/89	Letter to Ken Miller	Dennis Kennedy Illinois Dept. Transportation	Floodway and Proposed Construction at NL Site	1
98. 2/14/90	Letter to Brad Bradley	Ken Miller	Alternative M ARARs Concerns	1

	DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
99.	10/27/89	Article	"The U.S. EPA Weekly Report"	Lead-in-Soil Clean-up Plan comments	2
100.	3/12/90	Public Comment	Dames & Moore	Comment Regarding St. Louis Lead Recyclers	16
101.	August 1989	Draft Feasibility Study Report	O'Brien & Gere	Same as Title	142 + Tables & Figures
102.	1/10/90	FS Report Addendum	U.S. EPA	Same as Title	24
103.	1/10/90	Proposed Plan	U.S. EPA	Same as Title	26
104.	None	Cost Calculations	U.S. EPA	Cost Calculations for Alternatives	3
105.	May 1987	"Review and Recommendations on a Lead in Soil Guidance"	Hazardous Contaminants Branch	Report to the Minister of the Environment	56
106.	5/7-9/88	"Lead in Soil Issues and Guidelines"	M.W. Mielke	Proceedings from a Conference held in Chapel Hill, N.C.	10
107.	10/23/89	"Health Hazard and Risk Assessment from Exposure to Heavy Metals in ore in Skagway, Alaska"	J.P. Middaugh etal	Same as Title	20

	DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
108.	2/1/90	"Acidity of Stomach Secretions in Humans, Rats and Pigs, and the Potential Importance of stomach pH in Bioavailability of Pb in Soils and Mine Wastes"	Rufus Chaney, USDA	Same as Title	11
109.	1987	"Toxic Effects of Lead in the Developing Nervous system: In Ocular Experimental Models"	B. J. Hoffer etal	Article from "Environmental Health Perspectives"	7
110.	None	Abstracts from "Medline/Lead"	Various	Listing of Lead studies	10
111.	Various	Excerpt from Integrated Risk Information system	None	Lead data	10
112.	January 1985	"Preventing Lead Poisoning in Young Children"	Centers for Disease Control	Same as Title	82
113.	May 1988	"Fact Sheet-Drinking Water and Lead"	U.S. EPA	Lead Data	4
114.	4/23/87	"Longitudinal Analyses of Prenatal and Postnatal Lead Exposure and Early Cognitive Development"	D. Bellinger etal	Article in "New England Journal of Medicine" Same as Title	7
115.	Various	Articles	Various	Three Articles Entitled "Sources of Lead in the Urban Environment," "The Potential for Heavy Metal Exposure from Urban Gardens and Soils," and "Lead Concentrations in Inner-City Soils as a Factor in the Child Lead Problem"	27
116.	1982	"Lead-Laden Freeway Parks Hazardous to Kids"	Louis Freedberg	Same as Title	4

	DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
117.	7/11/84	"Condition and Type of Housing as an Indicator of Potential Environmental Lead Exposure and Pediatric Blood Lead Levels"	C.S. Clark	Article in "Environmental Research" Same as Title	3
118.	3/13/85	"Evolution of Efficient Methods to Sample Lead Sources, such as House Dust and Hand Dust, in the Homes of Children	S.S. Quattee etal	Same as Above	10
119.	3/1/88	"Lead and Osteoporosis: Mobilization of Lead from Bone in Postmenopausal Women"	E.K. Silbergeld	Same as Above	13
120.	December 1984	"Separating the Effects of Lead and Social Factors on IQ"	S.R. Schroeder	Same as Above	11
121.	1/11/90	"The Long-Term Effects of Exposure to Low Doses of Lead in Childhood"	Needleman etal	Article in "The New England Journal of Medicine" Same as Title	6
122.	8/25/88	"Port Pirie Cohort Study Enviromental Exposure in Lead and Children's Abilities at Age of Four Years"	McMichael etal	Same as above	8
123.	6/8/84	"The Relationship Between Prenatal Exposure to Lead and a congenital Anomalies"	Needleman etal	Article in "JAMA" -Same as Title	4
124.	5/30/87	"Influence of Blood Lead on the Ability and Attainment of Children in Edinburgh"	Fulton etal	Article in "The Lancet" -Same as Title	6
125.	None	"Neurobehavioral Effects of Lead"	R.L. Bornschein	Same as Title	15
126.	April 1985	"Home Refinishing, Lead Paint, and Infant Blood Lead Levels"	Rabinowitz etal	Article in "AJPH" - Same as Title	2

	DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
127.	June 1986	"Exterior Surface Dust Lead, Interior House Dust Lead and Childhood Lead Exposure in an Urban Environment"	Bornschein etal	Same as Title	13
128.	1988	"Port Pirie Cohort Study: Childhood Blood Lead and Neurophsychological Development at age 2 years"	Wigg etal	Article in "Journal of Epidemiology and Community Health" -Same as Title	78
129.	3/12/90	Public Comment	Bradley O'Brien, Gardner Carter, & Douglas	Comment regarding NL Industries Public Comment	1
130.	None	Drawing	U.S. EPA	Sketch of possible Final contours for Expanded Terracorp pile	2
131.	None	"Assessing the Contribution from Lead in Mining Wastes to Blood Lead"	Steele etal	Same as Title	40
132.	None	"Low-Level Lead Exposure and Infant Development in the First Year"	Bellinger etal	Article in "Neurobehavioral Toxicology and Teratology" -Same as Title	11
133.	Various	Public Comments	Various	Public Comments received on NL Proposed Plan	269
134.	3/30/90	Conversation Record	Milt Clark U.S. EPA	Record of conversation with ATSDR regarding soil lead clean up levels	1

	DATE	TITLE/DOCUMENT TYPE	AUTHOR	CONTENTS	PAGES
135.	7/11-12/89	Site Visit Notes/ "NL Trip" Notes	Brad Bradley	Notes from 7/11-12/89 Visit to NL Site area	12
136.	10/30/90	Memorandum to NL Site File	Brad Bradley	Additional remediation areas in Granite City, Madison, Venice and Eagle Park Acres, IL	1
137.	8/30/90	NL Industries "Good Faith" Offer	Janet Smith	Same as Title	3+ attachments
138.	8/31/90	NL Generators "Good Faith" Offer	Dennis Reis, Sidley & Austin	Same as Title	15+ attachments
139.	8/31/90	SLIR "Good Faith" Offer	George Von Stamwitz, Armstrong, Teasdale, Schlafly, Davis & Dicus	Same as Title	4+ attachments
140.	9/14/90	"Good Faith Offer Rejection Letter- NL Industries	Norman Niedergang	Same as Title	1
141.	9/14/90	"Good Faith" Offer Rejection Letter-NL Generators	Norman Niedergang	Same as Title	4
142.	9/23/90	"Good Faith" Offer Rejection Letter-SLIR	Norman Niedergang	Same as Title	1
143.	6/22/90	Waste-in List	None	Generator Ranking Summary	15

Draft Documents

143.	September 1984	"Health Effects Assessment for Lead"	Environmental Criteria and Assessment Office, U.S. EPA	Same as Title	45
144.	October 1989	"Technical Support Document on Lead"	Environmental Criteria and Assessment Office, U.S. EPA	Same as Title	78

Attached is a compendium of CERCLA Response Selection Guidance Documents, which is part of this index.'

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COMPENDIUM OF CERCLA RESPONSE SELECTION GUIDANCE DOCUMENTS

Doc No	Vol	Title	Date	Authors	Status	Pages	Tier	Attachments	OSWER/EPA Number
0000	1	INDEX TO COMPENDIUM OF CERCLA RESPONSE SELECTION GUIDANCE DOCUMENTS	05/01/89	- OPE - PRC-ENVIRONMENTAL MANAGEMENT, INC.	Final	9		1) DATA ELEMENT DEFINITIONS 2) ORGANIZATIONAL ABBREVIATIONS AND ACRONYMS IDENTIFIED IN INDEX	
**		Pre-Remedial							
0001	1	EXPANDED SITE INSPECTION TRANSITIONAL GUIDANCE FOR FY-88	10/01/87	- OSWER	Final	74	3		OSWER #9345.1-01
0001	1	PRELIMINARY ASSESSMENT GUIDANCE FISCAL YEAR 1988	01/01/88	- OSWER/OSCD	Final	83	3		OSWER #9345.0-01
**		Removal Action							
1000	1	CERCLA REMOVAL ACTIONS AT RELEASE SITES	01/13/86	- LONGEST, M.L./OSWER	Final	3	2		OSWER #9360.0-8
1001	1	COSTS OF REMEDIAL RESPONSE ACTIONS AT UNCONTROLLED HAZARDOUS WASTE SITES	01/01/81	- RIGGS, H.L., ET AL./SCS ENGINEERS - ALDERSON, D.W./HQRL	Final	104	1		
1002	1	EMERGENCY RESPONSE PROCEDURES FOR CONTROL OF HAZARDOUS SUBSTANCE RELEASES	01/01/83	- WELVOLD, R.W./ROCKWELL INTERNATIONAL - MCCARTHY, L.T./HQRL	Final	33	1		EPA-600/D-84-013
1003	1	ENVIRONMENTAL REVIEW REQUIREMENTS FOR REMOVAL ACTIONS	04/13/87	- OSWER/OSD	Final	6	3		OSWER #9360.0-03
1004	1	GUIDANCE ON IMPLEMENTATION OF THE "CONSISTENCY TO REMEDIAL RESPONSE" PROVISION	04/06/87	- OSWER	Final	6	3		OSWER #9360.0-11
1005	1	GUIDANCE ON NON-NPL REMOVAL ACTIONS INVOLVING NATIONALLY SIGNIFICANT OR PRECEDENT SETTING ISSUES	04/03/89	- LEITESS, M.L./OSWER	Final	8	3	1) RELEASE FOR CONCURRENCE	OSWER #9360.0-19
1005	1	INFORMATION ON DRINKING WATER ACTION LEVELS	04/19/88	- FIELDS, JR., T./OSWER/OSD	Final	17	3	1) HEAD: RELEASES FROM LAWFULLY APPLIED PESTICIDES 2) HEAD: CROP CONTAMINATION 3) GUIDANCE FOR ETHYLENE DIBROMIDE IN DRINKING H2O	
1006	1	SUPERFUND REMOVAL PROCEDURES, REVISION #3	01/01/88	- OSWER/OSWR	Final	365	1		OSWER #9360.0-03B
1007	1	THE ROLE OF EXPEDITED RESPONSE ACTIONS UNDER SARA	04/21/87	- LONGEST, M.L./OSWR	Final	3	2		OSWER #9360.0-15
4002	36	INTERIM FINAL GUIDANCE ON REMOVAL ACTION LEVELS AT CONTAMINATED DRINKING WATER SITES (Secondary Reference)	10/06/87	- OSWER/OSWR	Final	9	3		OSWER #9360.1-01
6001	32	REMOVAL MODEL WORKLOAD ANALYSIS (Secondary Reference)	04/01/86	- OSWER/OSWR	Final	170	1		OSWER #9360.0-02A

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COMPENDIUM OF CERCLA RESPONSE SELECTION GUIDANCE DOCUMENTS

DOC NO	Vol	Title	Date	Authors	Status	Pages	Tier	Attachments	OSWER/EPA Number
**		RI/FS - General							
2000	2	CASE STUDIES 1-23: REMEDIAL RESPONSE AT HAZARDOUS WASTE SITES	03/01/84	- CH2M/OEET/MERL - OSWER/OERR	Final	830	1		EPA 540/2-84/002B
2001	3	EPA GUIDE FOR MINIMIZING THE ADVERSE ENVIRONMENTAL EFFECTS OF CLEANUP OF UNCONTROLLED HAZARDOUS-WASTE SITES	06/01/85	- ENVIRONMENTAL RESEARCH LABORATORY	Final	350	2		EPA/600/8-85/008
2002	3	GUIDANCE FOR CONDUCTING REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES UNDER CERCLA	10/01/88	- CANTER/OERR	Final	390	1		OSWER #9355.3-01
2003	3	JOINT CORPS/EPA GUIDANCE	06/24/83	- OERR/PAS	Final	42	2		OSWER #9295.2-02
2004	4	MODELING REMEDIAL ACTIONS AT UNCONTROLLED HAZARDOUS WASTE SITES (VOL. I-IV)	04/01/85	- ROUNWELL, S.M. ET AL./ANDERSON-NICHOLS AND CO. - OSWER/OERR - AMOTH, D.C. AND RENWELL, JR E.D. AMERL	Final	350	1		OSWER #9355.0-08
2005	4	POLICY ON FLOODPLAINS AND WETLAND ASSESSMENTS FOR CERCLA ACTIONS	08/01/85	- LETTERMAN, JR., W.H./OERR - ELECTRO, C./OWPE	Final	9	2		OSWER #9280.0-02
2006	4	REMEDIAL RESPONSE AT HAZARDOUS WASTE SITES: SUMMARY REPORT	03/01/84	- CH2M/MERL	Final	95	1		EPA 540/2-84/002A
2007	4	REVISED PROCEDURES FOR IMPLEMENTING OFF-SITE RESPONSE ACTIONS	11/13/87	- PORTER, J.W./OSWER	Final	30	2		OSWER #9834.11
2008	4	RI/FS IMPROVEMENTS	07/23/87	- LONGEST, H.L./OERR	Final	11	2	1) RI/FS IMPROVEMENTS	OSWER #9355.0-20
2009	4	RI/FS IMPROVEMENTS FOLLOW-UP	04/25/88	- LONGEST, H.L./OERR	Final	16	2	1) RI/FS IMPROVEMENTS FOLLOW-UP 2) REMEDIAL INFORMATION TRANSFER ACTIVITIES	OSWER #9355.3-05
2010	4	SUPERFUND FEDERAL-LEAD REMEDIAL PROJECT MANAGEMENT HANDBOOK	12/01/86	- OERR	Draft	170	1		OSWER #9355.1-1
2011	5	SUPERFUND REMEDIAL DESIGN AND REMEDIAL ACTION GUIDANCE	06/01/86	- OERR	Final	100	1		OSWER #9355.0-4A
2012	5	SUPERFUND STATE-LEAD REMEDIAL PROJECT MANAGEMENT HANDBOOK	12/01/86	- OERR	Final	130	1		OSWER #9355.2-1
**		RI/FS - RI Data Quality/Site & Waste Assessment							
2100	5	A COMPENDIUM OF SUPERFUND FIELD OPERATIONS METHODS	12/01/87	- OERR - OWPE	Final	550	1		OSWER #9355.0-14
2101	6	DATA QUALITY OBJECTIVES FOR REMEDIAL RESPONSE ACTIVITIES: DEVELOPMENT PROCESS	03/01/87	- CDM FEDERAL PROGRAMS CORP - OERR/OWPE	Final	150	1		OSWER #9355.0-7B

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DOC NO	VOL	TITLE	DATE	AUTHORS	STATUS	PAGES	TIER	ATTACHMENTS	OTHER/EPA NUMBER
2102	6	DATA QUALITY OBJECTIVES FOR REMEDIAL RESPONSE ACTIVITIES (EXAMPLE SCENARIO: RI/FS ACTIVITIES AT A SITE W/ CONTAMINATED SOILS AND GROUNDWATER	03/01/87	- ICF FEDERAL PROGRAMS CORP - CERCLA/OPE	Final	120	1		OSWER #9355.0-7B
2103	6	DESIGN AND DEVELOPMENT OF HAZARDOUS WASTE REACTIVITY TESTING PROTOCOL	03/01/84	- HOLBACH, G.D., ET AL./ACUREX CORP - BARKLEY, N./HQEM	Final	150	1		EPA-600/2-84-057
2104	6	FIELD SCREENING FOR ORGANIC CONTAMINANTS IN SAMPLES FROM HAZARDOUS WASTE SITES	04/01/86	- ROTHMAN, M.K., ET AL./ALS CORP - CARTER, A./MICHIGAN DEPT OF NATURAL RESOURCES - THOMAS, T./EPA	Final	11	2	1) HEAD: FIELD SCREENING FOR ORGANIC CONTAMINANTS	
2105	6	FIELD SCREENING METHODS CATALOG: USER'S GUIDE	09/01/88	- CERCLA/OSD	Final	90	1		EPA/540/2-88/005
2106	6	FIELD STANDARD OPERATING PROCEDURES MANUAL #4-SITE ENTRY	01/01/85	- CERCLA/OSD	Final	20	2		OSWER #9285.2-01
2107	7	FIELD STANDARD OPERATING PROCEDURES MANUAL #6-WORK ZONES	04/01/85	- CERCLA/OSD	Final	19	2		OSWER #9285.2-04
2108	7	FIELD STANDARD OPERATING PROCEDURES MANUAL #8 AIR SURVEILLANCE	01/01/85	- CERCLA/OSD	Final	24	2		OSWER #9285.2-03
2109	7	FIELD STANDARD OPERATING PROCEDURES MANUAL #9-SITE SAFETY PLAN	04/01/85	- CERCLA/OSD	Final	26	2	1) SAMPLE SITE SAFETY PLAN AND CERCLA SAFETY PLAN 2) EMERGENCY OPERATION CODES REAL TIME MONITOR 3) RESPONSE SAFETY CHECK-OFF SHEET	OSWER #9285.2-05
2110	7	GEOPHYSICAL METHODS FOR LOCATING ABANDONED WELLS	07/01/84	- FRISCHKNECHT, F.M., ET AL./U.S GEOLOGICAL SURVEY - WARE, J./USGS	Final	211	1		EPA-600/4-84-043
2111	7	GEOPHYSICAL TECHNIQUES FOR SENSING BURIED WASTES AND WASTE MIGRATION	06/01/84	- BENSON R.C., ET AL./RIDGES INC - WARE, J./USGS	Final	236	1		EPA-600/7-84/064
2112	8	GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROGRAM DOCUMENTATION	06/01/83	- OSWER/QUALITY ASSURANCE MANAGEMENT STAFF	Final	31	2	1) HEAD: GUIDANCE ON PREPARING QAPP'S DATED 6/10/83	
2113	8	LABORATORY DATA VALIDATION FUNCTIONAL GUIDELINES FOR EVALUATING INORGANICS ANALYSES	07/01/88	- EPA DATA REVIEW WORK GROUP - BLEVINS, B./VIAR AND CO./SAMPLE MGMT. OFFICE - HQED	Draft	30	1		
2114	8	LABORATORY DATA VALIDATION FUNCTIONAL GUIDELINES FOR EVALUATING ORGANICS ANALYSES	03/01/88	- BLEVINS, B./VIAR AND CO./SAMPLE MGMT. OFFICE - EPA DATA REVIEW WORKGROUP - HQED	Draft	45	2		

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2115	8	PRACTICAL GUIDE FOR GROUND-WATER SAMPLING	09/01/85	- BARCELONA, M J., ET AL./ILLINOIS ST. WATER SURVEY - SCALF, M R./ORD/ERL	Final	175	1		EPA/600/2-85/104
2116	8	SEDIMENT SAMPLING QUALITY ASSURANCE USER'S GUIDE	07/01/85	- BARTH, D.S. & STARKS, T.S./UNIV. OF NEV, LAS VEGAS - BROWN, K.W./EMSL	Final	130	1		EPA/600/4-85/048
2117	8	SOIL SAMPLING QUALITY ASSURANCE USER'S GUIDE	05/01/84	- BARTH, D.S. & MASON, B J./U OF NEVADA, LAS VEGAS - BROWN, K./ORD/EMSL	Final	104	1		EPA 600/4-84/043
2118	9+	TEST METHODS FOR EVALUATING SOLID WASTE, LABORATORY MANUAL PHYSICAL/CHEMICAL METHODS, THIRD EDITION (VOLUMES IA, IB, IC, AND II)	11/01/86	- OSWER	Final	3000	1		
2119	11	USER'S GUIDE TO THE CONTRACT LABORATORY PROGRAM	12/01/88	- OERR/CLP SAMPLE MANAGEMENT OFFICE	Final	220	2		OSWER #9240.0-1
**		RI/FS - Land Disposal Facility Technology							
2300	13	COVERS FOR UNCONTROLLED HAZARDOUS WASTE SITES	09/01/85	- MCANENY, C.C., ET AL./U.S. COE/WES - HOURWOOD, J M./HWERL	Final	475	2		EPA/540/2-85/002
2301	13	DESIGN, CONSTRUCTION, AND EVALUATION OF CLAY LINERS FOR WASTE MANAGEMENT FACILITIES	11/01/88	- GOLDMAN, J L., ET AL./NUS - ROULIER, M H./RREL	Final	500	2		EPA/530/SW-86/007F
2302	13	EVALUATING COVER SYSTEMS FOR SOLID AND HAZARDOUS WASTE	09/01/82	- LUTTON, R.J./U.S.A. COE/WES - LANDRETH, R E./MERL	Final	58	2		OSWER #9476.00-1
2303	13	GUIDANCE MANUAL FOR MINIMIZING POLLUTION FROM WASTE DISPOSAL SITES	08/01/78	- TOLMAN, A L., ET AL./A W MARTIN ASSOCIATES, INC. - SANNING, D.E./MERL	Final	83	1		EPA-600/2-78-142
2304	13	LAND DISPOSAL RESTRICTIONS	08/11/87	- LONGEST, H.L./OERR - LUCERO, G./OWPE	Final	33	2	1) SUMMARY OF MAJOR LDR PROVISIONS AND CALIFORNIA LIST PROHIBITIONS 2) OTHER ATTACHS CITED ARE AVAILABLE IN	

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								FED. REG.	
2205	14	LINING OF WASTE CONTAINMENT AND OTHER IMPOUNDMENT FACILITIES	09/01/88	- MATRECON, INC. - LANDRETH, R./ORD/RISK REDUCTION ENGINEERING LAB	Final	950	2		
2206	15	LINING OF WASTE IMPOUNDMENT AND DISPOSAL FACILITIES	03/01/83	- LANDRETH, R./MERL	Final	480	2		OSWER #9480.00-4
2207	15	PROCEDURES FOR MODELING FLOW THROUGH CLAY LINERS TO DETERMINE REQUIRED LINER THICKNESS	01/01/84	- OSW	Draft	145	2		OSWER #9480.00-10
2208	15	RCRA GUIDANCE DOCUMENT: LANDFILL DESIGN LINER SYSTEMS AND FINAL COVER	07/01/82	- EPA	Draft	30	2		
2209	15	SETTLEMENT AND COVER SUBSIDENCE OF HAZARDOUS WASTE LANDFILLS: PROJECT SUMMARY	05/01/85	- MURPHY, W.L. - GILBERT, P.A.	Final	4	2		EPA-600/S2-85-035
2210	15	SUPPLEMENTARY GUIDANCE ON DETERMINING LINER/LEACHATE COLLECTION SYSTEM COMPATIBILITY	06/07/86	- HEDDLE, B.R./PERMITS AND STATE PROGRAMS DIV	Final	60	2	1) ANALYSIS AND FINGERPRINTING OF UNEXPOSED & EXPOSED POLYMERIC MEMBRANE LINERS MATRECON, INC 2) SEC. 3019 EXPOSURE INFO. AND HEALTH ASSESSMENTS	OSWER #9480.00-13
2211	15	TECHNICAL GUIDANCE DOCUMENT: CONSTRUCTION QUALITY ASSURANCE FOR HAZARDOUS WASTE LAND DISPOSAL FACILITIES	10/01/86	- HERRMANN, J.G./HWERL/LAND POLLUTION CONTROL DIV - OSWER	Final	88	2		OSWER #9472.003
2212	15	TREATMENT OF REACTIVE WASTES AT HAZARDOUS WASTE LANDFILLS: PROJECT SUMMARY	01/01/84	- STEINER, D. ET AL./ARTHUR D. LITTLE, INC - LANDRETH, R./MERL	Final	4	2		EPA/600/S2-83/118
3000	25	APPLICABILITY OF THE HSWA MINIMUM TECHNICAL REQUIREMENTS RESPECTING LINERS AND LEACHATE COLLECTION SYSTEMS [Secondary Reference]	04/01/85	- SKINNER, J./OSW	Final	3	2		OSWER #9480.01(85)

** RI/FS - Other Technologies

DOC NO	Vol	Title	Date	Authors	Status	Pages	Tier	Attachments	OSWER/EPA Number
2300	16	A COMPENDIUM OF TECHNOLOGIES USED IN THE TREATMENT OF HAZARDOUS WASTES	09/01/87	- ORD/CERI	Final	49	2		EPA/625/8-87/014

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COMPENDIUM OF CERCLA RESPONSE SELECTION GUIDANCE DOCUMENTS

DOC NO	Vol	Title	Date	Authors	Status	Pages	Tier	Attachments	OSWER/EPA Number
2301	16	CARBON ADSORPTION ISOTHERMS FOR TOXIC ORGANICS	04/01/80	- DOBBS, R A /MERL - COHEN, J M./MERL	Final	331	3		EPA/600/8-80-023
2302	17	ENGINEERING HANDBOOK FOR HAZARDOUS WASTE INCINERATION	09/01/81	- BONNER, T A., ET. AL./MONSANTO RESEARCH CORP. - OBERACKER, D.A./IERL	Final	445	3		OSWER #9488.00-5
2303	17	EPA GUIDE FOR IDENTIFYING CLEANUP ALTERNATIVES AT HAZARDOUS WASTE SITES AND SPILLS: BIOLOGICAL TREATMENT	—	- PACIFIC NORTHWEST LABORATORY - RAMSEY, L.C./CORVALLIS ENVIRONMENTAL RESEARCH LAB	Final	120	3		EPA-600/3-83-063
2304	17	EPA GUIDE FOR INFECTIOUS WASTE MANAGEMENT	05/01/86	- OSWER/OSW	Final	75	3		OSWER #9410.00-1
2305	17	GUIDANCE DOCUMENT FOR CLEANUP OF SURFACE IMPOUNDMENT SITES	06/01/86	- [illegible]-CLYDE [illegible] F. WESTON - BARTH, E /OERR	Final	30	1		OSWER #9380.0-06
2306	17	GUIDANCE DOCUMENT FOR CLEANUP OF SURFACE TANK AND DRUM SITES	05/28/85	- [illegible]-CLYDE [illegible] F. WESTON/C.C. JOHNSON - BARTH, E. AND BIXLER, B /OERR	Final	135	1		OSWER #9380.0-03
2307	18	HANDBOOK FOR EVALUATING REMEDIAL ACTION TECHNOLOGY PLANS	08/01/83	- EHRENFELD, J. AND BASS, J /ARTHUR D. LITTLE INC - PAHREN, H.R. /MERL	Final	420	1		EPA-600/2-83-076
2308	18	HANDBOOK FOR STABILIZATION/SOLIDIFICATION OF HAZARDOUS WASTE	06/01/86	- CULLINANE JR., M J. ET AL./U.S. COE/WES - TOURCOTTE, J M /ORD/HWERL	Final	135	1		EPA/540/2-86-001
2309	19	HANDBOOK REMEDIAL ACTION AT WASTE DISPOSAL SITES (REVISED)	10/01/85	- ORD/HWERL - OSWER/OERR	Final	560	1		EPA/625/6-85/006
2310	20	LEACHATE PLUME MANAGEMENT	11/01/85	- REPD, E. AND ELLIS, C. /JRB ASSOCIATES - BARKLEY, N /EPA	Final	590	1		EPA/540/2-85/004
2311	20	MOBILE TREATMENT TECHNOLOGIES FOR SUPERFUND WASTES	09/01/86	- CAMP, DRESSER, AND MCKEE INC - CALER, L.D /HRSD	Final	130	1		EPA/540/2-86-003(f)
2312	21	PRACTICAL GUIDE-TRIAL BURNS FOR HAZARDOUS WASTE INCINERATORS	04/01/86	- GORMAN, P., ET AL./MIDWEST RESEARCH INSTITUTE - OBERACKER, D.A./HWERL	Final	63	3		EPA/600/2-86/050
2313	21	PRACTICAL GUIDE-TRIAL BURNS FOR HAZARDOUS WASTE INCINERATORS, PROJECT SUMMARY	07/01/86	- GORMAN, P., ET.AL./MIDWEST RESEARCH INSTITUTE - OBERACKER, D.A./HWERL	Final	3	1		EPA/600/S2-86/050

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DOC NO	VOL	TITLE	DATE	AUTHORS	STATUS	PAGES	TIER	ATTACHMENTS	OSWER/EPA NUMBER
3314	31	PROHIBITION ON THE PLACEMENT OF BULK LIQUID HAZARDOUS WASTE IN LANDFILLS-STATUTORY INTERPRETIVE GUIDANCE	06/11/86	· OSWER/OGC	Final	35	1	1) MEMO RE SAME SUBJECT FROM WILLIAMS, M.E./OSW	OSWER #9487.00 (A
3315	31	REVIEW OF IN-PLACE TREATMENT TECHNIQUES FOR CONTAMINATED SURFACE SOILS-VOL. 2: BACKGROUND INFORMATION FOR IN-SITU TREATMENT	11/01/84	· SIMS, R.C., ET AL./JRB ASSOCIATES · BARKLEY, N./ADRL	Final	350	1		EPA-540/2-84-003b
3316	31	REVIEW OF IN-PLACE TREATMENT TECHNIQUES FOR CONTAMINATED SURFACE SOILS-VOL. 1: TECHNICAL EVALUATION	09/19/84	· OSWER/ODW · CRD/HWRL	Final	165	1		EPA/540/2-84-003a
3317	32	SLURRY WALL CONSTRUCTION FOR POLLUTION MIGRATION CONTROL	02/01/84	· CERI · CRD/HWRL	Final	230	1		EPA/540/2-84-001
3318	32	SYSTEMS TO ACCELERATE IN SITU STABILIZATION OF WASTE DEPOSITS	09/01/86	· MALLER, M., ET AL./ENVIRONSPHERE CO · CRUSE, P./HWRL	Final	265	1		EPA 540/2-86/002
3319	32	TECHNOLOGY SCREENING GUIDE FOR TREATMENT OF CERCLA SOILS AND SLUDGES	09/01/88	· OSWER/OERR	Final	130	1		EPA 540/2-88/004
3320	32	TREATMENT TECHNOLOGY BRIEFS: ALTERNATIVES TO HAZARDOUS WASTE LANDFILLS	07/01/86	· HWRL	Final	35	2		EPA/600/8-86/013

** RI/FS - Ground-water Monitoring & Protection

3400	33	CRITERIA FOR IDENTIFYING AREAS OF VULNERABLE HYDROGEOLOGY UNDER RCRA STATUTORY INTERPRETIVE GUIDANCE	07/01/86	· OSWER/OGC	Final	950	2		OSWER #9472.00 (A
3401	34	FINAL RCRA COMPREHENSIVE GROUND-WATER MONITORING EVALUATION (CME) GUIDANCE DOCUMENT	11/19/86	· LLOYD, C.A./OWPE	Final	55	2	1) RELATIONSHIP OF TECHNICAL HYDROLOGICIES TO GROUND-WATER PERFORMANCE STANDARDS	OSWER #9950.2
3402	34	GROUND-WATER MONITORING AT CLEAN-CLOSING SURFACE IMPOUNDMENT AND WASTE PILE UNITS	03/31/88	· PUSKIN, J.M./OSWER	Final	3	2		OSWER #9476.00-14
3403	34	GROUND-WATER PROTECTION STRATEGY	08/01/84	· OFFICE OF GROUND-WATER PROTECTION	Final	65	2		EPA/440/6-84-002
3404	34	GUIDELINES FOR GROUND-WATER CLASSIFICATION UNDER THE EPA GROUND-WATER PROTECTION STRATEGY	12/01/86	· OFFICE OF GROUND-WATER PROTECTION	Draft	600	2		
3405	34	OPERATION AND MAINTENANCE INSPECTION GUIDE (RCRA GROUND-WATER MONITORING SYSTEMS)	03/30/88	· OSWER/OWPE/RCRA ENFORCEMENT DIVISION	Final	30	2	1) TRANSMITTAL MEMO RE SAME SUBJECT	OSWER #9950.1

COMPENDIUM OF CERCLA RESPONSE SELECTION GUIDANCE DOCUMENTS

DOC NO	Vol	Title	Date	Authors	Status	Pages	Rev	Attachments	OSWER/EPA Number
2406	24	PROTOCOL FOR GROUND-WATER EVALUATIONS	09/01/86	- HAZARDOUS WASTE GROUND WATER TASK FORCE	Final	300	3		OSWER #9080.0-1
2407	25	RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT(TEGD)	09/01/86	- EPA	Final	220	3		OSWER #9950.1
2408	25	RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT, TEGD: EXECUTIVE SUMMARY	07/01/87	- LUCERO, C.A./OPE	Final	8	1		OSWER #9950.1-8
**	ARAR								
3000	25	APPLICABILITY OF THE RCRA MINIMUM TECHNICAL REQUIREMENTS RESPECTING LINERS AND LEACHATE COLLECTION SYSTEMS	04/01/85	- SKINNER, J./OSW	Final	3	3		OSWER #9480.01(85)
3001	25	CERCLA COMPLIANCE WITH OTHER ENVIRONMENTAL STATUTES	10/01/85	- PORTER, J.W./OSWER	Final	19	1	1) POTENTIALLY APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS	OSWER #9234.0-1
3002	25	CERCLA COMPLIANCE WITH OTHER LAWS MANUAL	08/08/88	- OSWER	Draft	245	3		OSWER #9234.1-01
3003	25	EPA'S IMPLEMENTATION OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986	03/31/87	- THOMAS, L.M./EPA	Final	6	3		
3004	25	GUIDANCE MANUAL ON THE RCRA REGULATION OF RECYCLED HAZARDOUS WASTES	01/01/86	- INDUSTRIAL ECONOMICS, INC - OSW	Final	350	3		OSWER #9441.00-1
3005	25	INTERIM RCRA/CERCLA GUIDANCE ON NON-CONTIGUOUS SITES AND ON-SITE MANAGEMENT OF WASTE AND TREATMENT RESIDUE	03/27/86	- PORTER, J.W./OSWER	Final	6	3	1) CONSIDERING HAZARDOUS WASTE SITES FOR RCRA ACTION	OSWER #9347.0-1
3400	25	CRITERIA FOR IDENTIFYING AREAS OF VULNERABLE HYDROGEOLOGY UNDER RCRA' STATUTORY INTERPRETIVE GUIDANCE [Secondary Reference]	07/01/86	- OSWER/OSW	Final	950	3		OSWER #9472.00-1A
3401	24	FINAL RCRA COMPREHENSIVE GROUND-WATER MONITORING EVALUATION (CME) GUIDANCE DOCUMENT [Secondary Reference]	11/19/86	- LUCERO, C.A./OPE	Final	55	3	1) RELATIONSHIP OF TECHNICAL INADEQUACIES TO GROUND-WATER PERFORMANCE STANDARDS	OSWER #9950.2
3402	24	OPERATION AND MAINTENANCE INSPECTION GUIDE (RCRA GROUND-WATER MONITORING SYSTEMS) [Secondary Reference]	01/30/88	- OSWER/OWPE/RCRA ENFORCEMENT DIVISION	Final	50	3	1) TRANSMITTAL MEMO RE SAME SUBJECT	OSWER #9950-2
3407	25	RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT(TEGD) [Secondary Reference]	09/01/86	- EPA	Final	220	3		OSWER #9950.1
3408	25	RCRA GROUND-WATER MONITORING TECHNICAL ENFORCEMENT GUIDANCE DOCUMENT, TEGD: EXECUTIVE SUMMARY [Secondary Reference]	07/01/87	- LUCERO, C.A./OPE	Final	8	1		OSWER #9950.1-8

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COMPENDIUM OF CERCLA RESPONSE SELECTION GUIDANCE DOCUMENTS

DOC NO	VOL	TITLE	DATE	AUTHORS	STATUS	PAGES	TIER	ATTACHMENTS	OSWER/EPA NUMBER
2200	15	RCRA GUIDANCE DOCUMENT: LANDFILL DESIGN LINER SYSTEMS AND FINAL COVER (Secondary Reference)	07/01/83	- EPA	Draft	30	3		
9001	33	RCRA/CERCLA DECISIONS MADE ON REMEDY SELECTION (Secondary Reference)	06/24/85	- KILPATRICK, M /COMPLIANCE BRANCH, OWPE	Final	3	3		
**		Water Quality							
4000	36	ALTERNATE CONCENTRATION LIMIT GUIDANCE PART 1, ACL POLICY AND INFORMATION REQUIREMENTS	07/01/87	- OSWER/HQ	Final	134	3		OSWER #9481.00-6C
4001	36	GUIDANCE DOCUMENT FOR PROVIDING ALTERNATE WATER SUPPLIES	03/01/88	- OSWER	Final	64	3		OSWER #9355.3-02
4002	36	INTERIM FINAL GUIDANCE ON REMOVAL ACTION LEVELS AT CONTAMINATED DRINKING WATER SITES	10/06/87	- OSWER/OERR	Final	9	3		OSWER #9360.0-02
4003	36	QUALITY CRITERIA FOR WATER 1986	05/01/87	- OFFICE OF WATER REGULATIONS AND STANDARDS	Final	335	3		EPA/440/5-86-001
2301	16	CARBON ADSORPTION ISOTHERMS FOR TOXIC ORGANICS (Secondary Reference)	04/01/80	- DOBBS, R A /WERL - COHEN, J M /WERL	Final	331	3		EPA/600/8-80-023
1005	1	INFORMATION ON DRINKING WATER ACTION LEVELS (Secondary Reference)	04/19/88	- FIELDS, M., T /OSWER/OWPE	Final	17	3	1) HEAD RELEASES FROM LARGELY APPLIED PESTICIDES 2) HEAD DBCP CONTAMINATION 3) GUIDANCE FOR ETHYLENE DIBROMIDE IN DRINKING H2O	
**		Risk Assessment							
5000	37	ATSDR HEALTH ASSESSMENTS ON NPL SITES	06/16/86	- DEPT OF HEALTH AND HUMAN SERVICES/ATSDR	Draft	14	3		
5001	37	CHEMICAL, PHYSICAL & BIOLOGICAL PROPERTIES OF COMPOUNDS PRESENT AT HAZARDOUS WASTE SITES	09/27/85	- CLEMENT ASSOCIATES, INC	Final	320	3		OSWER #9850.0
5002	37	FINAL GUIDANCE FOR THE COORDINATION OF ATSDR HEALTH ASSESSMENT ACTIVITIES WITH THE SUPERFUND REMEDIAL PROCESS	05/14/87	- PORTER, J W /OSWER/OERR - ATSDR	Final	21	3	1) SAME TITLE, DATED 4/23/87	OSWER #9285.4-02
5003	37	GUIDELINES FOR CARCINOGEN RISK ASSESSMENT (FEDERAL REGISTER, SEPTEMBER 24, 1986, p. 33992)	09/24/86	- EPA	Final	13	3		

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Doc No	Vol	Title	Date	Author	Status	Pages	Tier	Attachments	OSWER/EPA Number
9004	37	GUIDELINES FOR EXPOSURE ASSESSMENT (FEDERAL REGISTER, SEPTEMBER 24, 1986, p. 34042)	09/24/86	- EPA	Final	14	3		
9005	37	GUIDELINES FOR HEALTH ASSESSMENT OF SUSPECT DEVELOPMENTAL TOXICANTS (FEDERAL REGISTER, SEPTEMBER 24, 1986, p. 34028)	09/24/86	- EPA	Final	14	3		
9006	37	GUIDELINES FOR MUTAGENICITY RISK ASSESSMENT (FEDERAL REGISTER, SEPTEMBER, 24, p. 34006)	09/24/86	- EPA	Final	8	3		
9007	37	GUIDELINES FOR THE HEALTH RISK ASSESSMENT OF CHEMICAL MIXTURES (FEDERAL REGISTER, SEPTEMBER 24, 1986, p. 34014).	09/24/86	- EPA	Final	13	3		
9008	38+	HEALTH EFFECTS ASSESSMENT DOCUMENTS (50 CHEMICAL PROFILES) VOL 38: ACETONE, ARSENIC, ASBESTOS, BARIUM, BENZO(A)PYRENE, CADMIUM, CARBON TETRACHLORIDE, CHLORDECONE, CHLORINE, CHLOROFORM, COAL TARS, COPPER, CRESOLS, CYANIDE, DDT, 1,1-DICHLOROETHANE, 1,2-DICHLOROETHANE: VOL 39: 1,1-DICHLOROETHYLENE, 1,2-DICHLOROETHYLENE, CIS-1,2-DICHLOROETHYLENE, ETHYLBENZENE GLYCOL ETHERS, HEXACHLOROBENZENE, HEXACHLOROBUTADIENE, HEXACHLOROCYCLOPENTADIENE, HEXAVALENT CHROMIUM, IRON (AND COMPOUNDS), LEAD, LINDANE, MANGANESE (AND COMPOUNDS), MERCURY, METHYL ETHYL KETONE, METHYLENE CHLORIDE, NAPHTHALENE, NICKEL, PENTACHLOROPHENOL, PHENOL, PHOSPHORUS, VOL 40: POLYCHLORINATED BIPHENYLS (PCBS), POLYCYCLIC AROMATIC HYDROCARBONS (PAHS), PYRENE, SELENIUM (AND COMPOUNDS), SODIUM CYANIDE, SULFURIC ACID, 2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN, 1,1,2,2-TETRACHLOROETHANE, TETRACHLOROETHYLENE, TOLUENE, 1,2,4-TRICHLOROBENZENE, 1,1,1-TRICHLOROETHANE, TRICHLOROETHYLENE, 2,4,5-TRICHLOROPHENOL, 2,4,6-TRICHLOROPHENOL, TRIVALENT CHROMIUM, VINYL CHLORIDE, XYLENE, ZINC (AND COMPOUNDS)	09/01/84	- ORD/OHEA/ECAO - OSWER/ODSP	Final	1750	3		EPA/540/1-86/001-038
9009	31	INTEGRATED RISK INFORMATION SYSTEM (IRIS) [A COMPUTER-BASED HEALTH RISK INFORMATION SYSTEM AVAILABLE ON-LINE E-MAIL - PROTOCOL ON ACCESS IS INCLUDED]	-	- OEA	Final	-	3		

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DOC NO	VOL	TITLE	DATE	AUTHORS	STATUS	PAGES	TIER	ATTACHMENTS	OSWER/EPA NUMBER
5010	1)	INTERIM POLICY FOR ASSESSING RISKS OF "DIOXINS" OTHER THAN 2,3,7,8-TCDD	01/07/87	· THOMAS, L M /EPA	Final	50	3	1) INTERIM PROCEDURES FOR ESTIMATING RISKS ASSOCIATED WITH EXPOSURES TO MIXTURES: 10/86	
5011	1)	PUBLIC HEALTH RISK EVALUATION DATABASE (PHRED) [USER'S MANUAL AND TWO (2) DISKETTES CONTAINING THE DBASE(II) PLUS SYSTEM ARE INCLUDED]	09/10/88	· ODW/TOXICS INTEGRATION BRANCH	Final	-	3		
5012	1)	ROLE OF ACUTE TOXICITY BIOASSAYS IN THE REMEDIAL ACTION PROCESS AT HAZARDOUS WASTE SITES	08/01/87	· ARMY, L A, ET AL /PACIFIC NORTHWEST LABORATORY · MILLER, W E /CORVALLIS ENVIRONMENTAL RESEARCH LAB	Final	106	3		EPA/600/8-87/044
5013	1)	SUPERFUND EXPOSURE ASSESSMENT MANUAL	04/01/88	· ODW	Final	160	1		OSWER #9285.5-1
5014	1)	SUPERFUND PUBLIC HEALTH EVALUATION MANUAL	10/01/86	· ODW · OSWER	Final	500	1		OSWER #9285.4-1
8015	1)	TOXICOLOGY HANDBOOK	08/01/85	· LIFE SYSTEMS, INC · TYBURSKI, T E /OHPE	Draft	136	3		OSWER #9850.1
8000	1)	ENHANCEMENT ASSESSMENT GUIDANCE [Secondary Reference]	11/13/85	· FORTER, L M /OSWER	Final	11	3		OSWER #9850.0-1
**	Cost Analysis								
6000	1)	REMEDIAL ACTION COSTING PROCEDURES MANUAL	10/01/87	· JRB ASSOCIATES/CH2M HILL · ORD/HERL · OSWER/ODW	Final	56	1		
6001	1)	REMOVAL COST MANAGEMENT MANUAL	04/01/88	· OSWER/ODW	Final	130	1		OSWER #9360.0-02B
1003	1	ENVIRONMENTAL REVIEW REQUIREMENTS FOR REMOVAL ACTIONS [Secondary Reference]	04/13/87	· ODW/ERD	Final	6	3		OSWER #9318.0-03
**	Community Relations								
7000	1)	COMMUNITY RELATIONS IN SUPERFUND: A HANDBOOK (INTERIM VERSION)	06/01/88	· ODW	Final	188	3	1) CHAP. 6 OF THE ODW REL HANDBOOK 11/03/88	OSWER #9230.0-03A

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TABLE 1

Hazardous Substance List (HSL)

Volatiles

1. Chloromethane
2. Bromomethane
3. Vinyl Chloride
4. Chloroethane
5. Methylene Chloride

6. Acetone
7. Carbon Disulfide
8. 1,1-Dichloroethene
9. 1,1-Dichloroethane
10. trans-1,2-Dichloroethene

11. Chloroform
12. 1,2-Dichloroethane
13. 2-Butanone
14. 1,1,1-Trichloroethane
15. Carbon Tetrachloride

16. Vinyl Acetate
17. Bromodichloromethane
18. 1,1,2,2-Tetrachloroethane
19. 1,2-Dichloropropane
20. trans-1,3-Dichloropropene

21. Trichloroethene
22. Dibromochloromethane
23. 1,1,2-Trichloroethane
24. Benzene
25. cis-1,3-Dichloropropene
26. 2-Chloroethyl Vinyl Ether
27. Bromoform
28. 2-Hexanone
29. 4-Methyl-2-pentanone
30. Tetrachloroethene

31. Toluene
32. Chlorobenzene
33. Ethyl Benzene
34. Styrene
35. Total Xylenes

Semi-Volatiles

36. Phenol
37. bis(2-Chloroethyl) ether
38. 2-Chlorophenol

39. 1,3-Dichlorobenzene
40. 1,4-Dichlorobenzene
41. Benzyl Alcohol
42. 1,2-Dichlorobenzene
43. 2-Methylphenol

44. bis(2-Chloroisopropyl) ether
45. 4-Methylphenol
46. N-Nitroso-Dipropylamine
47. Hexachloroethane
48. Nitrobenzene

49. Isophorone
50. 2-Nitrophenol
51. 2,4-Dimethylphenol
52. Benzoic Acid
53. bis(2-Chloroethoxy) methane

54. 2,4-Dichlorophenol
55. 1,2,4-Trichlorobenzene
56. Naphthalene
57. 4-Chloroaniline
58. Hexachlorobutadiene

59. 4-Chloro-3-methylphenol (para-chloro-meta-cresol)
60. 2-Methylnaphthalene
61. Hexachlorocyclopentadiene
62. 2,4,6-Trichlorophenol
63. 2,4,5-Trichlorophenol
64. 2-Chloronaphthalene
65. 2-Nitroaniline
66. Dimethyl Phthalate
67. Acenaphthylene
68. 3-Nitroaniline

****** ANNOUNCEMENT ******

Pursuant to Section XXVI of the enclosed order, several parties have requested a conference with EPA to discuss the order. The conference will be held on December 21, 1990, at 9:00 in Chicago. The conference will be at 230 South Dearborn Street, Room 1098.